

Fostering Market Efficiency in K-12 Ed-tech Procurement

*A Report from Johns Hopkins University
to Digital Promise in partnership with
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EXECUTIVE SUMMARY

In K–12 education, the identification, evaluation, and acquisition of educational technology products (herein referred to as procurement) are essential but can often be a highly difficult process. But is the procurement process as onerous and challenging as certain stakeholders, particularly providers, describe? What are the most prevalent and serious barriers for end-users, such as principals and teachers, to obtain the products they need most? What are the effective practices that make procurement relatively smooth and reportedly successful in some school districts and for some providers?

The purpose of this study was to address these issues from the perspectives of diverse groups of educators and providers, using a mixed-method evaluation design. The specific research questions that guided the study were as follows:

1. What does the K–12 ed-tech procurement process for student-facing tools and applications that contribute to personalized learning currently look like for:
 - a. district and provider stakeholders
 - b. different types of stakeholders within school districts
 - c. different sizes of districts (smaller districts, larger districts); and
 - d. different types of providers (smaller firms, larger firms)?
2. What does, or would, a highly efficient K–12 ed-tech procurement process look like across those same dimensions?
3. What are the constraining conditions (i.e., obstacles) that do or could get in the way of an efficient ed-tech procurement process?
4. What are the enabling factors (i.e., best practices) that do or could facilitate an efficient ed-tech procurement process?

An Operational Framework

Based on our review of the literature and perspectives gained during data collection for this study, we present an operational framework that depicts five key *Action Points* of typical procurement processes in school districts. These Action Points are interactive and often overlapping rather than an invariant linear sequence. For present purposes, however, they provide an operational framework for relating results to key procurement needs that occur at one time or another along the pathway from the allotment of funding to the acquisition of selected products.

- ▶ **Action Point I:** *Allotment of funding* for ed-tech product acquisitions. The amount of funding available to purchase ed-tech products directly influences the degree of participant involvement in subsequent phases.
- ▶ **Action Point II:** *Assessment of needs* for ed-tech products. By knowing where and how ed-tech support is needed, school districts aptly put the horse before the cart, so that the search for products (Action Point III) has direction and purpose.
- ▶ **Action Point III:** *Discovery of ed-tech products* that address priority needs. This phase exposes school districts to a variety of ed-tech products that perform different educational functions, thus, creating opportunity to further investigate those appearing to offer the best fit.
- ▶ **Action Point IV:** *Evaluation of product quality and effectiveness:* Here, by examining evidence about the product, obtaining peer recommendations, observing demonstrations, and conducting “pilots” (quick-turnaround try-outs), school districts obtain information to guide selection of the product(s) likely to most reliably and effectively support instructional needs and goals.
- ▶ **Action Point V:** *Acquisition of selected products.* In this culminating activity, the products selected are acquired through completed purchasing agreements with the vendors. The processes involved may be quite straightforward and rapidly completed, or complicated and slowed by district (e.g., school board) or external (state or municipal) policies.

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Method

District participants were recruited on a voluntary basis through membership in various professional organizations. The core district participant sample consisted of participants from 54 districts in 31 states. Included were superintendents ($n = 43$), curriculum directors and related positions ($n = 44$), business officers and related positions ($n = 42$), technology directors and related positions ($n = 59$), and principals ($n = 103$). Ed-tech providers ($n = 47$) were also recruited on a voluntary basis to participate in the study.

Surveys and interviews were developed by the research team for each of the participant respondent groups (superintendents, curriculum directors, business officers, technology directors, principals, providers). Questions focused on such topics as perceptions of the overall procurement process, sources of information for evaluating products, stakeholder involvement in procurement, financial factors, challenges and enabling factors to procurement, and potential tools and information to improve procurement.

Results

From Start to Finish: Overall Perspectives

Results indicate that while few district stakeholders are satisfied with the efficiency and success of the procurement process, the majority views it as working sufficiently in most respects for acquiring the selected ed-tech products. Very small percentages of district respondents in any group expressed negative (dissatisfied) views about the procurement processes or their effectiveness in meeting contemporary needs. Districts are grappling with much larger issues such as teacher evaluations, principal recruitment, and implementing Common Core Standards curricula, and thus have less skin in the game than do providers. The latter, in sharp contrast, are extremely dissatisfied, with close to three-fourths conveying negative views about these respective questions. Providers also feel dissatisfied with the ease of communicating with districts regarding their products and procurement requirements. These findings foreshadow the differing experiences and reported barriers that these two major stakeholder groups (districts and providers) experience at each of the *Action Point* phases.

Key Findings:

- ▶ Members of all district participant groups have varied impressions of the procurement process. Few view it as working highly effectively or efficiently; however, most feel that it generally operates well enough to acquire the products they want to purchase.
- ▶ Providers are generally dissatisfied, mostly due to challenges with gaining exposure for their products and communicating with district decision-makers.

Action Point I: Allotment of Funding

The most frequent challenge expressed in open-ended survey responses, and most strongly emphasized by superintendents, related to funding and financial concerns. District participants referenced the cost of items, as well as reductions in the technology budgets for school districts.

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Key Findings:

- ▶ The apparent tightening of school district technology budgets nationally places increased pressure on providers to market their products in an already highly competitive and still-growing industry.
- ▶ For school districts, there is increased pressure to limit purchases to the applications judged more essential overall and less to those that would be more exploratory or supplemental.
- ▶ Although this study did not focus directly on budgeting, an emergent finding was that many districts view ed-tech software products as part of an isolated, “supplemental-type” budget, rather than intrinsic to broader budget allocations for curriculum and instruction, special education, and so forth.

Action Point II: Assessment of Needs

Encouragingly, the majority of participants interviewed conveyed that educational goals drive the selection and acquisition of ed-tech products. However, other than determining where student achievement gains were most needed, the use of formal, systematic processes of identifying instructional needs at the school or classroom levels did not appear highly prevalent.

District participants rated the technology director as having the greatest involvement in procurement. Notably, teachers were rated as having only a moderate involvement, and principals as slightly more involved than teachers.

Key Findings:

- ▶ Nearly all ed-tech products are acquired based on some type of needs assessment.
- ▶ Needs assessments appear to be mostly informal and focused on bolstering student achievement in identified curriculum areas.
- ▶ Formal needs assessments (e.g., surveying teachers and principals, using rubrics or rating scales to determine priorities, or convening review teams to collect data and share findings) seem much more rare.
- ▶ While teachers and principals arguably have the sharpest insights into instructional needs, they appear to be only “moderately” involved in this capacity.

Action Point III: Discovery of Ed-Tech Products

Superintendents and other district respondents emphasized the difficulty of sorting through the increasingly large number of products available. This challenge was echoed by providers in terms of gaining district awareness.

Key Findings:

- ▶ Discovery is a serious challenge for both school districts and providers, especially for less established providers.
- ▶ Districts in general do not have the capacity (personnel or time) to conduct thorough searches of what is available.
- ▶ Providers in general do not have the capacity or means to broadly expose districts to their products.
- ▶ To the extent that discovery is restricted to a few products that districts happen to identify through searches, peer recommendations, or vendor-driven marketing efforts that reach them, acquiring the most effective ed-tech solutions is largely a “hit-or-miss” undertaking.
- ▶ The challenges of the discovery process clearly appear to contribute strongly to providers’ general frustration with contemporary procurement processes.

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Action Point IV: Evaluation of Ed-Tech Products

District participants overall reported a moderate-to-extensive reliance on pilot tryouts (mostly informal demos and field tests) within the district for ed-tech procurement. Providers, however, had mixed reactions to their opportunities to conduct pilots in district schools. Peer recommendations and rigorous evidence were other key sources of evaluation information.

In general, survey responses by district participants were mixed regarding opportunities for products from less established providers or brands to be acquired. In interviews, some participants expressed concerns that the provider may not offer the same level of customer service and support as a more established brand. Further, some expressed concern that emerging providers may have less developed products as compared with established and recognized brands. Participants did acknowledge that some emerging companies have more innovative and engaging products and are willing to adapt product more readily than established brands.

Key Findings:

- ▶ There are no readily accessible sources of “rigorous” evidence on the effectiveness of the vast majority of ed-tech products. As a result, school districts largely depend on recommendations from peers and from their own teachers and principals who have familiarity with the products.
- ▶ Local “evidence” frequently comes from participation pilot studies of selected products. Because the pilots are informal (e.g., demos, brief try-outs, committee reviews), accuracy of the conclusions reached about product quality may be questionable. Most providers have nonrigorous evidence (from in-house evaluations or data analyses) on product effectiveness. Given providers’ interest in selling their products, school districts are hesitant to rely heavily on such information.
- ▶ Overall, both providers and school districts are frustrated by what might be described as largely a “hit-or-miss” approach to the vetting of many ed-tech products.

Action Point V: Acquisition of Selected Ed-Tech Products

Superintendents, technology directors, and business officers were mostly satisfied with the length of time of procurement. Curriculum directors, however, were slightly more dissatisfied. Predictably, given costs and the uncertainty involved with waiting for contracts to be approved, providers (with 73.3% negative) were highly dissatisfied.

District participants (except principals) generally disagreed that decentralized school procurement processes are desirable. In interviews, district administrators preferred a balanced process of allowing some amount of school-level purchasing with district oversight.

Regarding the acquisition modes employed for procurement, participants indicated a moderate reliance on both formal, competitive processes (e.g., RFP) and noncompetitive processes (e.g., sole source or other) in survey responses. Interviews with district participants revealed that the primary factor resulting in a formal process—when mandated by state guidelines—was the dollar amount of the purchase.

Interviews with district participants also revealed mixed views on the use of RFPs. Benefits of using a more formal RFP process included obtaining improved pricing through competition and encouraging districts to clearly establish product requirements prior to evaluating products. District participants also noted, however, the increased workload involved in crafting the RFP, as well as the effort required by providers to respond to the RFP.

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Key Findings:

- ▶ There was moderate satisfaction with current timeframes by most district participant groups, especially superintendents.
- ▶ District participants are moderately satisfied with—or not overly concerned about —school board, municipal, or state restrictions.
- ▶ Although RFPs require additional time and work by district personnel, they were viewed by some district interviewees as beneficial for vetting providers and their products.
 - ▶ Predictably, providers—for whom, more than any other participant group, time is money —were much less satisfied than were district participants with procurement timeframes and additional compliance criteria (school board, municipal, state, RFPs) that extend time and costs for them to sell their products.
 - ▶ Neither decentralized nor cooperative purchasing received strong support by most district participants as desirable purchasing strategies. Not surprisingly, principals were favorable toward decentralized decisions (i.e., greater school autonomy).

Comparisons Between Smaller and Larger Districts

Supplementary analyses were conducted to answer research question: What does the ed-tech procurement process look like for district participants within smaller districts as compared to larger districts?

In general, and not surprisingly, the procurement process was perceived as smoother and more inclusive by participants in smaller districts than by those in larger districts. Inferably, for the small districts, there appears to be greater opportunity for different stakeholders to communicate about needs and for end-users, such as teachers and principals, to influence discovery and acquisition. As district size increases, reliance on the business office and more formal acquisition processes tends to increase. Stakeholders in smaller districts, probably due in part to their stronger roles and the quicker turnaround in purchasing desired products, are more likely to regard the procurement process as meeting contemporary needs.

Key Findings:

- ▶ Both larger and smaller districts appear to struggle with similar challenges along the procurement pipeline. There were relatively few differences across all the survey item comparisons.
- ▶ Larger districts seem to struggle more, given the more extensive bureaucratic structures and numbers of stakeholders (teachers, principals, administrators), with achieving an inclusive, collaborative process that gives end-users a substantive voice (particularly in needs assessments and discovery).
- ▶ Large districts have potential advantages in their capacity to conduct both pilots and more intensive vetting of providers and products.

Relationship Between Company Size and Provider Responses

Supplementary analyses were conducted to answer the research question: What does the ed-tech procurement process look like for provider participants within smaller firms as compared to larger firms?

Of the 55 comparisons conducted, only three items showed differences between small and large providers. Small providers perceive somewhat more end-user involvement in the procurement process. Both groups are dissatisfied with both the time required for purchasing and with whether the procurement process meets contemporary needs. Small providers are generally more apt than large providers to see the marketplace as tough to penetrate.

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Key Findings:

- ▶ Company size did not relate strongly or consistently to perceptions of procurement.

Conclusions:

Here, we integrate results from the multiple stakeholder surveys and interviews to discuss the main findings. As an organizational scheme, we pose four questions that appear central to school districts' needs and activities in procuring ed-tech products. Consistent with the *Action Point* framework used throughout this report, the questions address, respectively, a focus on needs assessment, discovery, evaluation, and acquisition.

1. What ed-tech product do we need?
2. What ed-tech products are available for our needs?
3. Which available products are the best fit?
4. Can we acquire the products that we select in a timely manner?

What do we need?

Results indicate fairly consistent reliance by school districts on conducting some type of needs assessment, and moderate satisfaction that the identified needs are ultimately satisfied. Needs, however, were described in interviews in a global rather than specific manner: Raising test scores in a particular subject or facilitating data management, enabling authoring of lessons, and so forth. The specific types of ed-tech support required, such as “a tutorial program in math that involves parents in checking students’ work,” or “a data management system that includes rubrics for assessing project work” were rarely mentioned, although we suspect that some districts do conduct more granular analyses.

Conclusions:

- ▶ Some type of needs assessment is frequently conducted at the outset of procurement, but in many cases there is uncertainty about the specific ways that ed-tech products would be used, and what attributes they should have, to address instructional needs.
- ▶ End-users are less involved in the process than providers and district participants (particularly principals) would prefer.

Recommendations:

- ▶ Districts would likely benefit from the creation of guidelines and models for structuring instructional needs assessments to ensure that selections and acquisitions are linked directly to priority areas.
- ▶ Districts would likely benefit from guidelines for matching instructional design features of ed-tech products to needs assessments with regard to learning goals, instructional theory, learner analysis, user interface and support, alignment with curriculum, and so on. Districts should more integrally involve end-users in defining needs more specifically and operationally (e.g., “To teach problem-based learning more effectively in STEM classes...”).
- ▶ In communicating with district stakeholders, providers should increase awareness of current and future instructional needs so that they can adapt product design and market accordingly.

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What is Available?

The rapidly growing number of products available and lack of a reliable resource to aid in product discovery was a concern expressed by both district and provider participants. Without a central source to identify products, the evaluation of products proves to be a challenge for districts of all sizes. District participants desire product information independent of that offered by providers, and currently lack an efficient means of comparing products and making informed decisions based on objective information. Some districts are aware of various networks or websites that list products, but at this time do not see them as necessarily representing full ranges of products, the best products, or assurance that the products are supported by evidence or peer review.

Conclusions:

- ▶ There are likely to be multiple ed-tech products that can potentially support particular instructional needs, but district participants lack an efficient, practical means to learn about what the options are.
- ▶ Because instructional needs are often only generally defined (“Raise fourth-grade math scores”), even within a particular curriculum area, there are a plethora of product genres (e.g., full curricula, tutorials, games, presentational, whole-class vs. personalized, etc.) which complicates discovery even further.

Recommendations:

- ▶ Districts should increase use of Requests for Information (RFIs) to alert providers as to product needs and to produce information about potentially relevant ed-tech solutions.
- ▶ Districts should increase use of available dissemination and networking websites, which identify ed-tech products and where they are being implemented for instruction.
- ▶ Districts and providers would likely benefit from an online ed-tech products “Ed-tech Product Information Exchange” that would (a) list and describe available e-tech products, (b) report formal research studies on products and their results, (c) report pilot studies on products and their results, (d) report consumer reactions to ed-tech products, and (e) facilitate networking and communications between providers, districts, and evaluators. Importantly, this website would serve as a “one-stop-shop” that combines product information, pricing guidance, and so forth with evaluation findings and customer satisfaction reports.

Which Available Products Are the Best Fit?

For evaluating available ed-tech products, the present results showed fairly high reliance by school districts on external peers’ and internal end-users’ perceptions about the quality of particular ed-tech products. The latter group’s recommendations, in turn, appear to be largely based on direct interactions with the products via “informal” piloting activities. District participants, especially superintendents and principals, also conveyed on the survey and in interviews that rigorous evidence of product effectiveness (where available) was another important source of information for product selections.

Conclusions:

- ▶ Some type of evaluation strategy is almost always used by districts in the selection of products.
- ▶ Evaluating potential selections, however, is complicated by several factors: (a) lack of available, credible evidence on product effectiveness, (b) uncertainty about the criteria on which to evaluate products (Student achievement gains? Usability? Professional development support?), and (c) the capacity of districts to conduct their own evaluations (i.e., pilots can be time-consuming and costly).

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- ▶ A valuable source of evaluation evidence for districts is peer recommendations because trusted stakeholders from demographically similar districts can provide candid firsthand impressions of their experiences and satisfaction with a particular ed-tech product. Peers can answer questions about impacts on teachers and students, and discuss the quality and level of the provider's support in offering training and technical assistance where needed.
- ▶ A second valuable source of evaluation evidence comes from conducting structured pilots that collect satisfaction and implementation data from teachers and students, and often, preliminary student achievement outcomes. Pilots provide a district with a firsthand "test drive" of selected products, so that their potential for wider adoption can be judged.
- ▶ A third valuable, but seemingly more limited, source of evaluation evidence is results from rigorous studies. Having rigorous evidence is certainly an advantage for differentiating an ed-tech product from its competitors, but such studies tend to be costly for providers to commission, and, once performed, may lack relevance to contextual conditions at many school districts or to current educational policies (e.g., Common Core State Standards). Products that facilitate teachers' work in planning and delivery instruction, such as managing and interpreting data, evaluating portfolios, and authoring lessons, are not likely to demonstrate measureable effects on student achievement (at least not nearly as quickly and strongly as instructional programs can). Similarly, instructional products used as supplements to regular curricular for relatively small segments of learning time per week may be helpful to students and teachers but produce only small effects on test scores.

Recommendations:

- ▶ Districts and providers would be likely to benefit substantially from having guidelines for conducting formal pilots to facilitate discovery and evaluation. The present findings indicate that pilots are highly regarded by all stakeholder groups, but effective strategies are needed for (a) matching products to be piloted to teachers based on interest and instructional needs; (b) funding the pilots; (c) collecting both qualitative and quantitative data on implementation, satisfaction, and educational outcomes; and (d) analyzing, interpreting, and using the data for product evaluation and development. Separate but inter-related guidelines for providers and districts would be invaluable.
- ▶ Districts would be likely to benefit from a national ed-tech product website ("Information Exchange"), as previously proposed for facilitating discovery, to make findings from pilots, rigorous studies, and peer experiences much more accessible.
- ▶ Providers would be likely to benefit from guidelines for how to acquire credible evidence for their products (e.g., engaging third-party evaluators for design reviews, case studies, experimental comparison group studies, etc.).
- ▶ Providers should seek opportunities to collect third-party (independent) evidence from evaluation studies (both treatment-control group comparisons and case studies) to differentiate and support their products.
- ▶ Districts would be likely to benefit from guidelines for accessing and evaluating evidence of effectiveness. Our findings indicate frustration and confusion regarding what constitutes meaningful evidence and how to interpret and weigh evidence from different sources such as rigorous studies, pilots, peer recommendations, and provider studies or data.

Can We Acquire the Products that We Want in a Timely Manner?

District interviewees conveyed as a general perspective that the procurement of ed-tech entails an increased number of options in the marketplace, less defined criteria for evaluation, and the involvement of more stakeholders than when procuring hardware or textbooks. These components tend to increase the complexity of the process and the timelines involved. A formal, competitive (e.g., RFP)

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process appears to be employed slightly more often than an informal process, and district participants were moderately satisfied with both forms. Smaller districts, though, indicated less reliance on a formal process compared to larger districts. The use of an RFP, when mandated for ed-tech acquisitions, is triggered by larger dollar purchases (the cut-offs for which greatly vary across districts), but are preferred by some district stakeholders (especially business officers) as ways of more carefully vetting products and comparing costs and services.

While varied views were presented by different district respondents within and across groups, there was moderate acceptance (and certainly not strong concerns about) the timeliness and nature of purchasing processes. In general, most district participants believe that they can usually obtain desired products in reasonable time once the necessary prerequisite steps (e.g., for needs assessment, discovery, evaluation) are taken. Little interference was seen from states, municipalities, or school boards. Providers, on the other hand, viewed the purchasing process as requiring a protracted timeline, and—if requiring a formal RFP process—entailing too much effort and cost for an uncertain result.

Conclusions:

- ▶ District purchasing policies do not, in general, extend product acquisition time.
- ▶ RFPs and other competitive processes have value in many cases for districts to more thoroughly vet products and obtain competitive pricing.
- ▶ Cooperative purchasing with other districts is an appealing concept in theory, but in reality, many districts see themselves as having specialized needs, valuing independence, and not wanting to spend extra time working out arrangements with other districts.
- ▶ Decentralized purchasing is appealing for school-based adaptations, but is viewed by superintendents and other central office administrators as generally undesirable (e.g., loss of quality control, fragmenting instructional practices, complicating purchasing district-wide).
- ▶ Governance from state, municipal, or school board policies have potential to interfere with or delay purchasing (and sometimes do), but in general do not appear to have a significant negative impact on ed-tech product acquisition.

Recommendations:

- ▶ Providers and districts would likely benefit from district guidelines and other policies that clarify acquisition processes, the use of RFIs, contracting requirements, RFP policies, and expected timeframes for different types of purchases.
- ▶ Providers and districts would likely benefit from policies and specific acquisition strategies that move more directly from successful pilots to timely and broader-based purchasing without the need for new RFPs.
- ▶ Providers and districts would likely benefit from expedited or simplified RFP processes and forms tailored to ed-tech instructional products. Creating templates or checklists of model RFPs, RFIs, and contract terms used by districts will be helpful to buyers and sellers.
- ▶ Providers and districts would likely benefit from educating school boards and states about the unique conditions and needs for acquiring ed-tech software vs. hardware products.

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What Have We Learned? Nine Notable Takeaways

Although the results reported in the present study—coming from six surveys and over 50 interviews—intend to provide a comprehensive examination of ed-tech procurement practices, a risk for readers is getting lost in the details and losing perspective of what is most important and impactful. What constitutes “importance” and “impact” is, of course, somewhat in the eye of the beholder. Accordingly,

we offer with that caveat in mind, what we as the researchers and authors believe emerged from the study as the most *significant* (impactful, interesting, provocative, supported) takeaways. We present them below in no particular order.

- 1 **Discovering what is out there.** The most significant challenge of procuring ed-tech products, as compared to traditional instructional products like textbooks, occurs in the discovery phase. The market is flooded with products across all content areas and many application types. Presently, providers struggle to gain visibility for their products, and school districts struggle to learn what is out there.
- 2 **Involving the end-user.** End-users (the practitioners in our classrooms) are often only marginally involved in the identification of instructional needs and selection of products. Unlike textbooks, which universally engage teachers in the same manner (making assignments, explaining content, guiding lesson planning), ed-tech products require much higher and more varied teacher interactivity. Learning how to use an ed-tech product can take substantial time for teachers. Implementing the product in the classroom changes the nature of teaching and other instructional activities. Seemingly, those who are so directly affected by the product should have a more central role in selecting and “test-driving” it before it is purchased.
- 3 **Knowing what you need.** Assessments of instructional needs are most frequently surface in nature, and thus do not identify the specific types of support and product attributes that best support instructional goals. Needs assessments must be more structured and precise.
- 4 **Pilots as a means of discovery and evaluation.** Pilots appear to have strong potential for districts and providers to collaborate in field-testing products for broader district adoption. Pilots that are structured and rigorous generate evidence about product efficacy that is not only useful locally but also to other districts considering the same products.
- 5 **National ed-tech product information exchange.** A potentially valuable tool to districts and providers would be a national website (“Ed-tech Product Information Exchange”), which extends existing networks and online information sites by providing comprehensive descriptions of products in different areas, evaluation evidence from pilots and rigorous studies, and consumer satisfaction reports. Such a website would greatly facilitate discovery and evaluation, the two *Action Point* domains where districts and providers struggle most.
- 6 **Similar district viewpoints.** For the most part, district participants assuming five different roles (superintendent, curriculum director, business officer, technology director, principals) perceive the procurement process and its strengths, weaknesses, and needs in the same way. While there is less intra-district communication than desired, there are not major disagreements between stakeholders or major dissatisfactions. Improvements in virtually all areas, however, are desired to increase efficiency and success in obtaining and then using the right products.
- 7 **Challenges for providers in a buyers’ market.** Providers, overall, are dissatisfied with many aspects of the procurement processes—the time delays, RFPs, communications with district stakeholders, getting products discovered. The root cause, it seems, is that there are so many products competing in a pronounced buyers’ market, and uncertain pathways for identifying districts’ needs and becoming noticed and differentiated from the competitors. Completing lengthy RFP applications and waiting for decisions further add to the cost and frustrations. For newer providers, all of these concerns intensify.

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- 8 Only small advantages for small districts.** Smaller districts can maneuver more easily through various procurement stages than larger districts due to having less complex bureaucracies and more immediate contact with administrators and end-users. However, for the most part, small and large districts appear to experience procurement very similarly with regard to processes, challenges, and needs.
- 9 Finding meaningful evidence.** Reliance on evidence of product effectiveness in making product selections is highly valued by nearly all district stakeholders. But there are misunderstandings about what constitutes reasonable evidence in the first place and frustrations in finding credible evidence. Few providers (except for the very large companies) can afford, or win large grants to fund a “randomized control trial” (RCT) to “prove” product effects on student learning. Products that are used in limited dosages or time periods, as supplementary instruction, or to facilitate teacher grading, data management, or lesson planning may not demonstrate measurable gains in any study, but still have considerable value to students, teachers, administrators, and parents. Therefore, as a practical alternative to complex and expensive RCTs and other highly controlled research studies, credible (third-party) evidence for judging project fit and potential efficacy can come from pilots, case studies, and small comparison-group designs. Yet, few providers, it seems, seek opportunities for their products to be evaluated in the latter types of studies.

Suggestions for Further Research

While this present study offers a breadth of information on ed-tech procurement gleaned from districts and provider participants, additional research is necessary to further explore this topic and provide recommendations to improve efficiency. We offer the following suggestions for additional research.

- ▶ A quantitative analysis of cost triggers and state policies for smaller and larger districts, resulting in competitive vs. non-competitive contracting.
- ▶ A study of how teachers and principals participate in the procurement process and the implications of greater or lesser involvement on satisfaction with and usage of acquired products.
- ▶ A study of how pilots are conducted by diverse districts, and the degree to which piloted products gain advantages for expedited purchasing and scale-up.
- ▶ A study of how providers determine district needs and the degree to which and how they design products accordingly.

FOSTERING MARKET EFFICIENCY IN K–12 ED-TECH PROCUREMENT

In K–12 education, the identification, evaluation, and acquisition of educational technology products (herein referred to as procurement) is an essential but often highly difficult process. While the venture capital sector of educational technology, or ed-tech, products is flourishing, many providers perceive the procurement process to be a closed system of centralized power that presents many barriers to entry for smaller tech developers and start-ups. Further, procurement policies often vary at the macro (federal and state), meso (district), and micro (individual schools and teachers) levels, creating a “Wild West” of practices (Younie, 2006). And, although there are exemplary cases of successful procurement processes being implemented, best practices and resources are rarely shared, resulting in a constant reinvention of the procurement wheel and a perpetual cycle of dissatisfaction for many stakeholders: product providers, administrators, educators, and ultimately, students. The procurement of educational technology products in K–12 education can be complicated in some school districts by a labyrinth of administrative and legislative barriers; consequently, in those situations, stakeholders sometimes must overcome numerous obstacles in an effort to promote effective teaching and learning with technology.

But is the procurement process as onerous and challenging as certain stakeholders, particularly providers, describe? What are the most prevalent and serious barriers for end-users, such as principals and teachers, to obtain the products they most need? What are the effective practices that make procurement relatively smooth and reportedly successful in some school districts and for some providers? To what degree do different stakeholders within school districts, namely superintendents, business officers, technology directors, curriculum directors, and principals, share similar views about what works well, what doesn’t work, and what improvements or types of tools and supports are needed to make procurement efficient and effective?

The purpose of this study was to address these issues from the perspectives of diverse groups of educators and providers, using a mixed-method evaluation designs. The specific research questions that guided the study were as follows:

1. What does the K–12 ed-tech procurement process for student-facing tools and applications that contribute to personalized learning currently look like for:
 - a. district and provider stakeholders
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 - c. different sizes of districts (smaller districts, larger districts); and
 - d. different types of providers (smaller firms, larger firms)?
2. What does, or would, a highly efficient K–12 ed-tech procurement process look like across those same dimensions?
3. What are the constraining conditions (i.e. obstacles) that do or could get in the way of an efficient ed-tech procurement process?
4. What are the enabling factors (i.e., best practices) that do or could facilitate an efficient ed-tech procurement process?

In the following sections, we first review relevant literature on the ed-tech procurement process, and then describe the study’s methodology, including sampling and instruments. In the largest section, results are reported and interpreted from survey and interview data. We conclude by discussing what was learned with respect to the evaluation questions and offering recommendations for improving future procurement practices for school districts, providers, and the primary consumers—teachers and students.

In the following section, we review selected findings from the research and practice literature to provide background for the present study. For readers interested in a more extensive coverage, we have prepared as part of this research project a comprehensive literature review in a separate document (Lake, 2014).

LITERATURE REVIEW

Background

The driving force behind educational technology products is personalized learning. As competencies and fluency with computing technologies increase, so does a demand for flexible learning environments, personalization of curriculum, and just-in-time learning. The *2011 Horizon Report* (Johnson, Smith, Willis, Levine, & Haywood, 2011) identifies key trends that suggest a shift toward personalized learning in K–12 schools: a re-examination of the educator’s role as a coach or facilitator and the expectation for convenient and adaptive learning (Spector, 2013). Consequently, the traditional one-size-fits-all classroom model no longer seems to fit. Instead, the demand for personalized learning has led to unprecedented advancements in instructional technologies.

Educational technology in the K–12 and higher education institutions is big business. Globally, ed-tech product spending reached US\$13 billion in 2013, up 11% from 2012 (FutureSource Consulting, 2014). Specifically, PreK–12 spending on educational technology was approximately US\$7.97 billion during the 2011–2012 school year, an increase of 2.7% from the previous year (Richards & Struminger, 2013). Domestically, the Department of Education implemented a federal budget of \$71.2 billion for the 2014 fiscal year, a 4.5% increase from the previous year (Center for Digital Education, 2013). These figures suggest that government is supportive of educational technology, both ideologically and financially; surprisingly, then, it is not simply a lack of funding that complicates the ed-tech procurement process that many schools face. In fact, numerous state and federal government-based initiatives have been implemented in an attempt to better understand and transform existing procurement practices. However, these efforts have in no way addressed the contemporary need to place quality ed-tech courseware products in schools to improve teaching and learning.

In 2013, the state of Maine led a collaborative effort alongside Hawaii and Vermont to purchase education technology products jointly. The Multi-State Learning Technology Initiative has developed a standard cooperative state purchasing agreement that helped to leverage better pricing, technology support, and service in exchange for more participating institutions and larger contracts. The initiative provides “an alternative to states and districts trying to make technology purchases ‘one at a time’” (Cavanagh, 2013). Although cooperative purchasing is not a recent development, it has gained popularity recently as school leaders have begun to recognize that a common intersection of frustration and misinformation exists for nearly all school business officers.

In 2010, the National Education Technology Plan (NETP) was prepared by the U.S. Department of Education’s Office of Educational Technology led by Secretary Arne Duncan. The plan was predicated upon the former NETP produced in 2004 and aimed to

implement a new approach to research and development (R&D) in education that focuses on scaling innovative practices in the use of technology in teaching and learning, transferring existing and emerging technology innovations into education, sustaining the R&D for education . . . and creating a new organization to address major R&D challenges. (U.S. Department of Education, 2010, p. x)

Specifically, the NETP suggests the development and adoption of a generally accepted definition of productivity as it relates to education (Goal 5.0 Productivity: Redesign and Transform). NETP strongly recommends improvement for existing “policies and technologies for managing costs, including those for procurement” (U.S. Department of Education, 2010, p. 73). Further, the plan asserts that the Department of Education can and should encourage common standards that will (a) enable cost-tracking measures for productivity improvement, and (b) develop a platform for collaboration and sharing of policies among federal, state, and local entities in an effort to circumvent roadblocks in procurement (U.S. Department of Education, 2010). The NETP’s commitment to reforming procurement strategies highlights the urgency of the issue on a national scale.

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Investment in digital technologies is also a popular political platform. The ConnectED initiative (2013) was launched by the Obama administration and charged the Federal Communications Commission to “take the steps necessary to build high-speed digital connections to America’s schools and libraries, ensuring that 99% of American students can benefit from these advances in teaching and learning.” The plan also calls for professional development of teachers, an investment in the ed-tech private sector, and a serious effort to provide rural schools and their students with technological opportunities that are equivalent to those of their urban counterparts. Often, political rhetoric expresses a fervent commitment to connecting every student to the digital age, yet the logistics of procurement are often overlooked.

European educational systems have been more proactive in addressing procurement challenges in K–12 education. The Finnish National Plan for Information and Communication Technology (ICT) called for a decentralized procurement of products and services, giving individual schools greater autonomy in their decision-making (Leviäkangas, Hautala, Britschgi, & Öörni, 2013). Consequently, this model of procurement leveled the playing field for smaller companies, which opened the market for more competitive pricing and allowed providers to work more closely with their educational partners in a transparent relationship. Unlike Finland, the United Kingdom reformed its educational policy to broaden procurement practices through government policy. This macro approach yielded many problems with this strategy, including “the multi-agency nature of the initiatives and their management; disparities of funding; technology resourcing and procurement; ICT training for teachers and impact on pedagogy” (Younie, 2006, p. 387). While little has been done in the United States regarding procurement practices, it would seem beneficial to examine other countries’ policies because many of the barriers and challenges to effective procurement coincide.

Barriers to Procurement

For educators, administrators, and vendors, numerous barriers complicate and sometimes impede successful integration of ed-tech products. Among other factors, the following conditions usually lead to a difficult procurement climate: schools lack quality judgment of products, districts are unaware of what is “cutting edge,” brand is a substitution for quality, no support guide exists, there are no inexpensive alternatives to level the playing field, buying consortiums do not work, lower-level decision making equals higher pricing, quality is uneven, purchasing wrongly means bad tech wins, and finally, big sales forces trump smaller startups (Levy, 2013). Of course, not all of these conditions need to exist for a dysfunctional procurement process to prevail.

Often, challenges arise from a breakdown in communication between stakeholders. Although most schools and school districts operate differently, and sometimes mutually exclusively, a chain of command emerges when it comes to procurement leadership and decision-making responsibilities. The majority of K–12 districts (64%) mandate that technology expenditures (regardless of the amount) must be approved at the district-level, and most districts (76%) use a committee-based approach to identifying and selecting which products to request for purchasing (Dyrli, 2007). These purchasing committees usually employ at least three different types of administrators: technology/IT directors, superintendents, and business/finance/purchasing directors. Although a cooperative approach to procurement decision-making produces a system of checks and balances and shared responsibility, it also may yield miscommunication.

Fluctuating school funding and available resources also influence the procurement process. Because national funding programs like the U.S. Recovery and Reinvestment Act and the Race to the Top and Investing in Innovation programs could dictate the quality of ed-tech procurement in school districts, there is a movement away from federal, state, and district funding, and toward individual pupil-based student funding; however, these programs often do not account for rural or underprivileged students (Bailey, Owens, Schneider, Vander Ark, & Waldron, 2014; Davis, 2013; Rivero, 2009).

Broadly speaking, the barriers to a successful procurement process can be categorized as (a) school/district budget and resources, (b) lack of communication among stakeholders, (c) lack of information

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to make well-informed buying decisions, and (d) a centralization of power for large ed-tech vendors resulting in a lack of competitive pricing. Although the ed-tech procurement hurdle appears insurmountable, there are encouraging cases in which an effective model is beginning to emerge.

Best Practices for Procurement

Successful procurement does not occur naturally or by happenstance; best practices do exist that promote an environment conducive to effective discovery and acquisition of ed-tech products. The Digital Learning Now! initiative provides a synthesis of keys to smart procurement (Bailey et al., 2014) based on the opinions of representatives from three organizations:

1. Take inventory
2. Determine the educational priorities
3. Exercise caution on customization
4. Pursue collaborative investigation and purchases
5. Demand guarantees and assurances
6. Make real comparisons
7. Conduct a pilot
8. Prioritize data sharing and interoperability
9. Remember that service matters
10. Consider total cost of ownership
11. Close the deal
12. Implement, implement, implement

Although the above suggestions certainly are useful, they focus on the buyer without establishing the broader context for the procurement process, which involves multiple school district stakeholders and their capacity in real-world situations to gain exposure to—and have adequate financial resources to acquire—needed ed-tech products. Further, the above suggestions were based solely on the perspectives of three providers that had substantial experience in the ed-tech marketplace. Accordingly, the present study significantly extends the scope and rigor of prior research by examining the perspectives of six different stakeholder groups that all interactively play different roles in procurement—from the allocation of funding to acquisition of desired products.

It is also important for stakeholders to understand the perspective of the provider. Ed-tech providers have a shared responsibility with administrators and educators to deliver educationally driven products and services. Provider responsibilities include knowing the customer, targeting the marketing of products to a district's or school's specific need, and facilitating the purchasing process by streamlining the bureaucratic tasks (Chou, 2013; Evergreen Education Group, 2012). A congruent partnership between stakeholders must exist in order for procurement to be successful.

In a recent study, Digital Promise and IDEO (2013) interviewed district administrators, providers, and education experts, and—not surprisingly—found challenges and varying satisfaction with the procurement process. Through interviews, six themes were identified: (a) risk aversion within districts, (b) the importance of school culture to ed-tech use, (c) struggles with procurement regulations, (d) difficulties with product discovery and evaluation, (e) challenges of sustainment due to resources, and (f) peer trust but outsider wariness.

This comprehensive study incorporates six respondent groups, two independent superintendent samples (one for cross-validation purposes), case studies of three diverse school districts, and a more broad set of interview and survey questions focusing on participant roles and satisfactions in five major phases of the procurement process (funding, needs assessment, discovery, evaluation, and selection).

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From Then to Now

Although there is abundant literature on procurement processes in education (see review by Lake, 2014), the findings as a whole are extremely limited for answering the important research questions that we posed in the introduction to this report: “What does the K–12 ed-tech procurement process look like for student-facing tools and applications that contribute to personalized learning?” One weakness is the dearth of *research* studies, as opposed to opinion pieces, policy discussions, and informal (descriptive) reports of data from stakeholder surveys and extant records of purchasing from school districts and providers. A second weakness is that the vast majority of papers do not pertain specifically to *contemporary ed-tech courseware* as opposed to hardware or other types of acquisitions (e.g., textbooks or laboratory equipment). A third limitation is that the literature is dated given the rapid current proliferation of educational technology in the K–12 arena, and the status of current conditions, such as shrinking purchasing budgets in many school districts in the midst of changing education programs and policies (e.g., phase out of Supplemental Educational Services, phase in of Common Core State Standards, the expansion of extended-learning programs, etc.). Simply put, we could find no existing study that is contemporary, rigorous, comprehensive, and directly relevant to the framing questions for the present study: What does the ed-tech procurement look like today? What works well and what doesn’t work for different stakeholders? How can procurement processes be improved to place desired products in the hands of teachers and students more quickly and economically?

Below we first describe an “operational framework” that depicts the major steps of a typical, desired procurement process. We plan to use this model as a framework for presenting the findings and interpreting what they imply at various phases of procurement for efficiently and successfully bringing desired products into classrooms.

An Operational Framework

Based on our review of the literature and perspectives gained during data collection for this study, we present an operational framework that depicts five key phases of *Action Points* for typical procurement processes in school districts (see Figure 1). These Action Points are interactive and often overlapping rather than an invariant linear sequence. For this study’s purposes, however, they provide an operational framework for relating results to key procurement needs that occur at one time or another along the pathway from the allotment of funding to the acquisition of selected products.

- ▶ **Action Point I:** *Allotment of funding* for ed-tech product acquisitions. More funding broadens and potentially deepens the activities and participant involvement in subsequent phases.
- ▶ **Action Point II:** *Assessment of needs* for ed-tech products. By knowing where and how ed-tech support is needed, school districts put the horse before the cart, so that the search for products (*Action Point III*) has direction and purpose. Less effective from an instructional design perspective (Morrison, Ross, Kalman, & Kemp, 2013) is the opposite approach of focusing on appealing product features (e.g., “bells and whistles”) first, and then assessing their potential to fill present or future needs in a follow-up analysis.
- ▶ **Action Point III:** *Discovery of ed-tech products* that address priority needs. This phase exposes school districts to a variety of ed-tech products that perform different educational functions, thus, creating opportunity to further investigate those appearing to offer the best fit.
- ▶ **Action Point IV:** *Evaluation of product quality and effectiveness:* Here, through examining evidence about the product, obtaining peer recommendations, observing demonstrations, and conducting “pilots” (quick-turnaround try-outs or field tests), school districts obtain information to guide selection of the product(s) likely to most reliably and effectively support instructional needs and goals.
- ▶ **Action Point V:** *Acquisition of selected products.* In this culminating activity, the products selected are acquired through completed purchasing agreements with the vendors. The processes involved may be quite straightforward and rapidly completed or may be complicated and slowed by district (e.g., school board) or external (state or municipal) policies.

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Figure 1. The procurement process in K–12 school districts.



In an ideal situation, the procurement process will move rapidly and efficiently through all of these Action Points. There are sufficient funds to purchase ed-tech products, and end-users, such as teachers and principals, actively engage in identifying instructional needs. Products that potentially meet those needs, both name brands and less established ones, are identified via communications with providers and peer school districts, and vetted through pilots and evidence reviews. Those products best meeting the instructional needs and the selection criteria are purchased quickly and used by teachers soon after contracts are signed. Under other circumstances, one or more of the Action Points will encounter obstacles (inadequate budget, undefined instructional needs, potentially effective products are overlooked, ineffective products are selected, timely acquisition is impeded by purchasing policies, etc.) that delay the process and reduce its success. The present study was designed to identify how school districts and providers navigate within and between these Action Points, what barriers occur that could be overcome by new tools or supports, and what effective practices are already being used that could be more widely disseminated and adopted by school districts and providers nationwide.

Method

As just described, the purpose of this mixed-methods research study was to examine the processes by which school districts discover, evaluate, and acquire ed-tech products to support personalized learning. Perspectives from both district stakeholders and providers were obtained through surveys and interviews.

Participants

The study employed a convenience sampling approach. District participants were recruited on a voluntary basis through membership in various professional organizations such as the American Association for School Administrators (AASA), the League of Innovative Schools, the Consortium for School Networking, and the State Educational Technology Directors Association. The core district participant sample consisted of participants from 54 districts in 31 states (see Appendix A for core district sample characteristics). Included were superintendents ($n = 43$), curriculum directors and related positions ($n = 44$), business officers and related positions ($n = 42$), technology directors and related positions ($n = 59$), and principals ($n = 103$). Ed-tech providers ($n = 47$) were recruited through outreach led by the Education Industry Association (EIA), with cooperation from the Software and Information Industry Association (SIIA), and through recruitment at ed-tech conferences (see Appendix B for provider characteristics).

A secondary sample of superintendents ($n = 47$) was compiled through responses to an emailed survey link deployed through AASA. These participants were from districts located in 25 states (see Appendix C for secondary sample district characteristics). Because the secondary sample of superintendents was not systematically linked to corresponding within-district participant subgroups (i.e., curriculum director, technology director, business officer, principal), as was the core sample, its responses were not combined with the latter,¹ but analyzed independently as a *cross-validation* test of the core sample findings.

1 That is, combining the secondary supplementary sample with the core sample would compromise the within-district matching of superintendents to the other four district participant groups.

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Aside from lacking within-district counterparts, the secondary sample differed from the core sample through selection differences. That is, those who responded to the AASA request may differ in interests or background from those who volunteered to participate in the core sample. Also, the type of superintendent that joins AASA may not be representative of a broader population. The secondary sample was also significantly more likely to be from small (less than 4,438 students) or medium-sized districts (4,438 to 11,350 students) than superintendents from the core sample ($\chi^2(2, n = 90) = 8.63, p = .013$).

Instruments

Surveys. Surveys were developed by the research team for each of the participant respondent groups (superintendents, curriculum directors, business officers, technology directors, principals, providers). A total of 30 Likert-type items were presented to all participants and an additional 8 to 22 Likert-type items were presented to respondents that were appropriate to their individual roles. All participants were asked three open-ended items, and select respondent groups were asked additional open-ended items. Survey items focused on such topics as perceptions of the overall procurement process, sources of information for evaluating products, stakeholder involvement in procurement, financial factors, challenges and enabling factors to procurement, and potential tools and information to improve procurement. A Technical Advisory Group consisting of school administrators and providers reviewed survey drafts, and revisions were incorporated into the final survey versions (see Appendix D).

Interviews. Interview questions (see Appendix E) for each participant respondent group were developed in order to further explore ed-tech procurement. Interview questions focused on topics including pedagogy, the procurement process, product effectiveness, purchasing factors, and effective practices and challenges.

Procedure

Participants in the core sample were assigned a unique identification code and were provided a link to complete the position-specific survey online. Participants in the AASA sample were provided a link to the superintendent survey. These participants were asked to indicate their school district name in order to obtain demographics information. Participation in the research study was voluntary and participants were informed that their responses were anonymous.

Participants were asked their willingness to participate in an interview upon completing the survey. A stratified random sample of participants was obtained from those agreeing to an interview to ensure representation from various sizes of districts and sizes of providers. Interviews were conducted with superintendents ($n = 9$), curriculum directors ($n = 6$), business officers ($n = 10$), technology directors ($n = 9$), principals ($n = 9$), and providers ($n = 10$).

Analyses

We first ran an omnibus test that told us if there were differences between stakeholders or not (Kruskal-Wallis and ANOVA²). If these omnibus tests indicated that there were statistical differences between

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- 2 Statistical tests can be grouped into parametric and nonparametric tests. They each do the same thing in terms of identifying differences between groups but have different applications. Parametric statistical tests, such as t-test and ANOVA, rely on the assumption that data, especially dependent variables, are normally distributed (the distribution looks like a bell curve) or that variances are evenly distributed across groups. When either assumption is violated, results from these statistical tests can be questioned. Nonparametric tests are sometimes called distribution-free tests and do not assume that data are normally distributed or that error variances are homogeneously distributed. Tests such as the Mann-Whitney (like a t-test) and the Kruskal-Wallis (like an ANOVA) tests are not as familiar to the general public but are commonly used especially when examining questions with an ordinal response scale (i.e., *strongly agree to strongly disagree*).
 - 3 For these analyses, we examined the distributions of each dependent variable and found that most violated one or both of the distribution assumptions. Thus, we report the results of the nonparametric analyses. Because audiences are more familiar with parametric tests, we also ran each analysis using parametric tests. Please note that we used a conservative adjustment—called a Bonferroni adjustment—to establish significant differences between groups. This adjustment protects against the chance of making a Type I error (finding a difference where none really exists).

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stakeholder mean responses, we then followed up with pairwise comparisons (post-hoc tests). If there were statistical differences between the means of the groups, they are noted on the table and explained in a table note (e.g., ^a Principals scored higher than providers).

For the qualitative data analysis, we used NVivo, a software program that facilitates coding, analysis, and reanalysis of qualitative data. We employed a grounded theory approach to the analysis of open-ended survey responses and transcripts of interview notes. Specifically, data were broken down into components parts and coded accordingly. The coding practices employed for the qualitative analysis included open coding, yielding concepts that were later grouped into categories, and axial coding, whereby relationships among codes were identified. Last, we employed a selective coding approach, whereby categories were integrated around a core category that was the central focus. This final coding practice allowed us to generate a theory around the phenomenon of ed-tech procurement.

Results

In this section we report results from the surveys and interviews. To give the findings more meaning and connection to the flow of typical procurement activities, we organize them here according to each of the Action Points comprising the Operational Framework presented earlier (see Figure 1). Using this approach, more attention will be given to findings that have greater saliency in telling the story of how procurement works, and as viewed by participants during these critical phases of implementation. For each Action Point, we further note what we believe to be the main implications of the findings for the operational flow, and suggest one or more hypotheses that future research might examine more closely. Readers interested in a comprehensive, item-by-item reporting of results are directed to the tables in Appendix F, which present response frequency data and means for every close-ended item for each subgroup. Further, the conclusions section of this report provides still another perspective on the results, by interpreting their implications for answering each research question.

Before describing what occurred at each of the Action Points, we begin with findings that address participants' more general or holistic reactions to ed-tech product procurement.

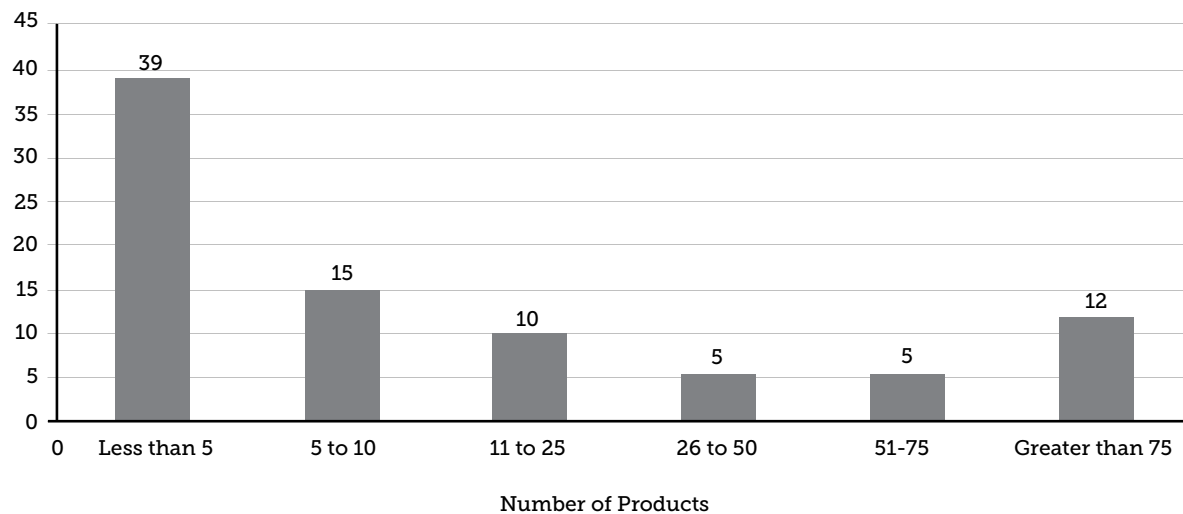
From Start to Finish: Overall Perspectives

Results reviewed in this section pertain to the quantity of products that are purchased and participant satisfaction and involvement with different phases of the procurement process.

How many products are purchased? Superintendents and business officers estimated the number of ed-tech products acquired by their district each year. Most superintendents (56%) and most business officers (34%) indicated purchasing fewer than 15 products each year. Principals estimated the number of ed-tech products purchased each year by their schools (see Figure 2). Most (48%) principals indicated purchasing fewer than five ed-tech products each year. In addition, business officers specified the dollar amount up to which schools could purchase ed-tech software products. These participants most commonly indicated that school purchases were not allowed at all (36%) or were acceptable when less than \$8,250 (36%). Additional results regarding purchasing requirements and levels are reported in the section describing *Action Point V-Acquisition of Ed-Tech Products*.

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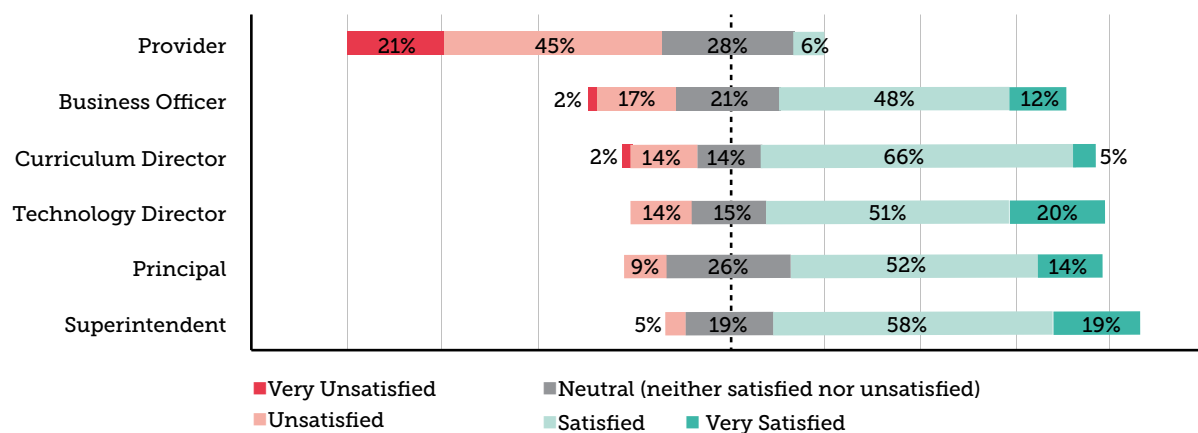
Figure 2. Approximate number of products purchased by schools each year, as reported by principals.



Satisfaction with the procurement process. District participants did not differ significantly on their degree of satisfaction toward the district’s process for identifying, evaluating, and acquiring needed ed-tech products. As a whole, district participants groups were predominantly satisfied (60–75% satisfied or highly satisfied) with the overall process of ed-tech procurement. In contrast, providers were significantly more dissatisfied with districts’ procurement processes (66% dissatisfied or very dissatisfied) than all district participants (see Figure 3).

Figure 3. Frequencies of responses assessing degree of satisfaction with “The district’s processes for identifying, evaluating, and acquiring needed ed-tech products.”

* $p < .001$.



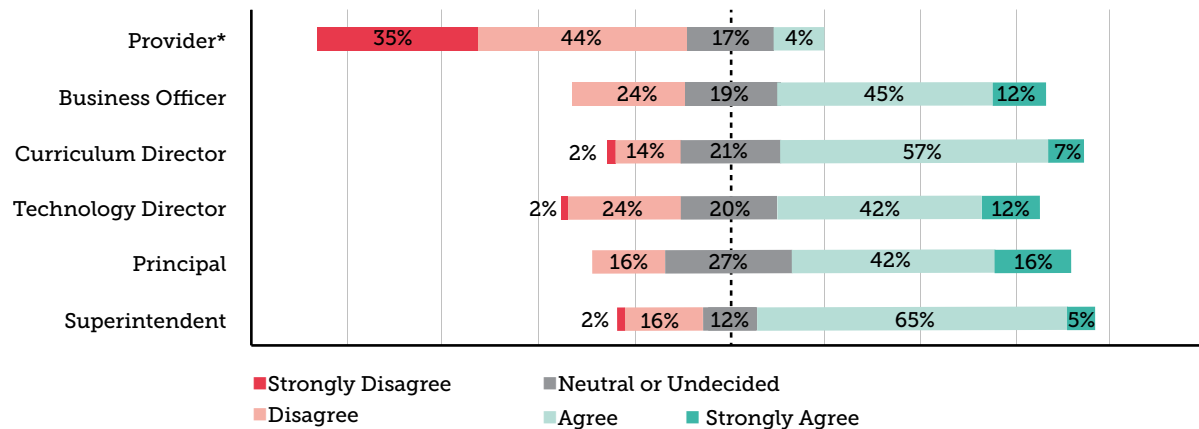
A significant difference ($p < .001$) was noted, though, between curriculum directors and principals on reported satisfaction of ed-tech procurement at the school level. Curriculum directors ($M = 3.29$) were more neutral than principals ($M = 3.75$), who were more satisfied. Technology directors ($M = 3.46$) were fairly neutral in their responses. Principals ($M = 3.61$) were also neutral, though nearing satisfied on their views.

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In addition to district and provider participants having differing levels of satisfaction with the process, there was disagreement as to whether the procurement processes meet contemporary needs for product acquisitions. District participants overall agreed ($M = 3.51$) with this statement, and a significant difference was found between each participant group and providers, who generally disagreed (79% negative, $M = 1.91$) with the statement (see Figure 4).

Figure 4. Frequencies of responses assessing level of agreement with “District procurement processes meet contemporary needs for product acquisition.”

* $p < .001$



Procurement processes and players. Interviews with district participants revealed procurement processes that may be described as “integrated.” In this integrated approach to procurement, procurement begins with the identification of an instructional need (see *Action Point II*, below), which was most commonly referenced at the district level. The discovery and evaluation of potential ed-tech products then involves both administrators and end-users (see *Action Points III* and *IV*). Participants described the identification of products by both school personnel and district administrators. Further, participants often referenced a committee consisting of teachers, principals, and district administrators that would be tasked with evaluating the ed-tech products, often through the use of pilots and product demonstrations.

Providers described a process in their interviews that originated sometimes with a school, sometimes at the district level. Some providers mentioned an initial conversation with a district administrator, followed by a demonstration or pilot, then a purchase. Other providers described a process that focused more on teachers and principals, which may then expand to a district acquisition. Overall, it seemed that provider engagement often took place conventionally via marketing efforts and responding to a RFP, but could also be idiosyncratic and opportunistic, in which meeting someone from the district led to further discussion and progression toward a sale.

Participants further elaborated in interviews on how the ed-tech procurement process might differ from the procurement of textbooks and hardware. Some participants noted that the procurement of ed-tech software should follow a similar process to that of textbook procurement. A business officer noted:

Textbooks involve committee evaluations and decisions that are education-based. Selection of ed-tech products, in theory, should be the same: evaluate, determine the best solution, and obtain the lowest prices. Textbooks and ed-tech are the most similar.

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The above comment, while seemingly a minority view, is noteworthy as it reflects a divide that may occur in some districts between the business office and the administrators and end-users responsible for curriculum and instruction. For the former, acquisition may be seen as a set of standard rules and actions to secure desired products—whether textbooks, laboratory equipment, or courseware—at the best price. For the latter, acquisition of ed-tech products is vastly more complex than for textbooks, due to the extensive differences in product features and functions and the integral involvement of end-users in product implementation. For example, a cheaper algebra tutorial that lacks some of the features that teachers view as critical (e.g., embedded quizzes or student time and usage records) would be a poor choice relative to a more costly one that does what is needed.

Although the selection of ed-tech products and textbooks may both be driven by an educational need, an important differentiating feature in the process is the lack of clearly defined evaluation criteria. For example, a superintendent noted:

Textbook selection is teacher-driven to review products with a check-off sheet; software review is not as documented and defined.

Further, a business officer commented:

Textbooks must match written criteria already in place; students need to be able to read in order to use a textbook. With technology, we need to consider technological competency on top of the product itself.

End-users, however, might be less enthused than business officers about the viability of evaluating a multitude of ed-tech products, given the demands of learning how to “operate” each product and the greater ambiguity and complexity of what makes it desirable. In this regard, participants noted that reviewing textbooks and hardware often involved clearly defined criteria, whereas software review was not as documented and defined. In addition, hardware procurement may need to involve fewer decision-makers.

A related survey item questioned whether data privacy and security needs made the procurement of ed-tech products different from the procurement of other products. Superintendents ($M = 3.35$) and technology directors ($M = 3.17$) were both neutral in their responses to this item. In interviews, participants recognized the concerns that arise in protecting student data in terms of ed-tech procurement, but noted that the importance of data privacy is frequently addressed when evaluating products and defined within contracts during the acquisition phase of procurement.

Communication. Logically, effective and efficient procurement processes require frequent and open communications between district stakeholders (superintendent, curriculum director, business officer, technology director, and principals). Survey responses by district participants were mostly neutral to moderately satisfied ($M = 3.49$) with communications regarding products to address specific instructional needs. Although there were no significant group differences, superintendents ($M = 3.77$) were slightly more positive than technology directors ($M = 3.19$). Some interviewees noted the importance of collaboration between stakeholders, recognizing that, for example, a curriculum director might focus on the instructional aspect of ed-tech, whereas a technology director would examine ed-tech from a compatibility perspective. Most participants reported that communications between district administrators and schools are generally positive and important, particularly because teachers and principals are directly involved with classrooms, where products are ultimately implemented.

By comparison, survey responses suggested that communication between districts and providers was less positive. For example, providers indicated in surveys that they were mostly unsatisfied with their ability to gain acceptance or visibility within a district and with their access to district decision makers regarding the procurement process. Providers ($M = 3.26$) also were generally neutral in rating districts’ openness to contracting with for-profit providers.

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Implications: The procurement process, in general, is viewed as moderately working by the majority of district stakeholders. Very small percentages of respondents in any group expressed negative (dissatisfied) views about the procurement processes (Figure 3) or their effectiveness in meeting contemporary needs (Figure 4). Providers, in contrast, are extremely dissatisfied, with close to three-fourths conveying negative views on these respective questions. Communications among district stakeholders are viewed as important and generally positive, but less frequent and open than they could be. Again, providers feel less satisfied with the ease of communicating with districts regarding their products and procurement requirements. These findings foreshadow the differing experiences and barriers that these two major stakeholder groups (districts and providers) experience at each of the Action Point phases to be visited below.

Action Point I: Allotment of Funding



The most frequent challenge expressed in open-ended survey responses, most strongly emphasized by superintendents, related to funding and financial concerns. District participants referenced the cost of items, as well as reductions in the technology budgets for school districts. A superintendent commented that the “cost of the items is a number one concern,” while another noted that the “tech budget is 50% less than six years ago.” Further, a technology director commented that “as with most districts the needs typically outweigh the funds available.” Providers also referenced funding and financial concerns. One provider noted, “budget challenges,” while another noted that, “relationship selling requires direct sales force, expensive to scale.”

Budget and financial limitations were also the most common challenge expressed by district participants in interviews. A superintendent commented: “The district has a limited budget, so we focus on strategy and are careful with having too many options.” A business officer also noted the challenge of “having adequate funding to get what is needed for appropriate student skill levels.”

In view of budget concerns, survey responses predictably showed superintendents ($M = 3.29$) to express significantly higher reliance on selecting products with the lowest cost as compared with business officers ($M = 2.74$). Providers ($M = 3.21$) also acknowledged districts’ reliance on lowest-cost products to be a factor in decisions.

“Bundled” products, where software and hardware are acquired together, are a possible means to lower costs and stretch budgets; however, survey responses reflected limited interest in this option. Superintendents ($M = 3.12$) reported a significantly higher, though moderate, reliance on bundled products as compared to technology directors ($M = 2.59$). Providers ($M = 2.28$) had the lowest mean response, which significantly differed from those of superintendents and business officers ($M = 3.00$). Business officers commented in interviews that districts typically purchase hardware and software separately.

Another possible cost-saving option is cooperative purchasing with other districts. However, interviews with both district and provider participants indicated that cooperative purchasing agreements with other districts were rarely, if ever, utilized for ed-tech purchases. Although the advantage of improved pricing for larger quantities was noted, disadvantages included the unique needs and desires of districts that impede cooperative purchasing.

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A business officer noted:

As a very large district, neighboring districts tend to have different needs and philosophies. Cooperative purchasing is more “red tape hassle” than possible cost benefits.

Similarly, a provider commented:

It’s easier to work with multiple districts and we would like to pursue cooperative agreements, but not all districts want the same things.

Some district participants did describe the use of piggyback purchasing, a process by which a smaller district could obtain products at a comparable price through a competitive process already employed by a neighboring district. In contrast to cooperative purchasing that requires districts to communicate and organize the purchasing of an identified product prior to the group purchase, piggyback purchasing can happen after another district completes a purchase. A business officer described this process:

Often times we’re able to piggyback off of a bid another district has used and so while we’re not able to circumvent the bid process we’re able to streamline it. So then I could go to the vendor and request that they give me a formal quote.

Finally, superintendents ($M = 3.33$), business officers ($M = 3.40$), and technology directors ($M = 3.17$) tended to agree that improving procurement efficiency would decrease costs. Although there were no significant group differences, providers ($M = 3.74$) voiced somewhat stronger support for this idea.

Implications: The apparent tightening of school district technology budgets nationally places increased pressure on providers to market their products in an already highly competitive and still-growing industry. For schools districts, there is increased pressure to limit purchases to the applications judged more essential overall and less to those that would be more exploratory or supplemental. Presently, cooperative purchasing and bundled products—both touted at times as potential cost-saving measures—appear to be rarely used by and generally unappealing to school districts.

Hypotheses³:

Shrinking budgets:

- ▶ increase reliance on centralized decision-making to exert more control over selections and expenditures.
- ▶ decrease involvement by end-users due to the narrowing of purchasing decisions.
- ▶ may reduce risk-taking by school districts, thereby giving advantages to more established companies and brands.
- ▶ are due, in part, in some districts to “ed-tech” expenditures being treated as a special, supplemental category rather than as an intrinsic part of expenditures in core categories such as special education and curriculum and instruction.

Possible Solutions:

- ▶ Higher efficiency, less demanding procurement processes may reduce costs for providers and, concomitantly, lower prices for consumers. (Suggestions are provided in subsequent Action Point sections of this report.)

3 These hypotheses are not sufficiently tested by the present study, and thus are posed as suppositions that we feel are suggested by our synthesis of the data, literature review, and discussions between ourselves, study partners, and others stakeholders (e.g., at professional meetings and other venues). In this sense, the hypotheses are intended to suggest possible directions for further, more fine-grained research on ed-tech product procurement.

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- ▶ More effective procurement processes should bring quality ed-tech products into classrooms, which, by promoting improved student learning, produce savings in demands for teacher time, remediation and retention, and continual replacement of ineffective or poorly fitting products.
- ▶ Demonstrating through evaluation studies that the use of ed-tech products has clear educational benefits should promote consideration in funding formulae and budgets for increasing of district expenditures. More rigorous evaluation studies of ed-tech product applications and outcomes are needed.

Action Point II: Assessment of Needs



Are instructional needs satisfactorily identified? To what degree and how do school district stakeholders identify what types of ed-tech products are most needed? In survey responses, district participants indicated that they were mostly neutral ($M = 3.66$) about the success of typical purchasing decisions for obtaining products that meet identified instructional needs. Superintendents, though, were slightly more satisfied than the other district participants. Providers were neutral ($M = 3.21$) in terms of their understanding of districts' instructional needs and preferred pedagogies.

From needs to product selection. In interviews, district participants identified some of the needs that guided their interest in certain types of ed-tech products. Encouragingly, the majority of participants described a procurement process with an educational goal in mind that drives the selection and acquisition of ed-tech products. However, other than determining where student achievement gains were most needed, the use of formal, systematic processes of identifying instructional needs at the school or classroom levels did not appear highly prevalent. Encouraging improvement on standardized test scores and developing student skills and competencies emerged as a relatively salient need by districts. Facilitating one or more forms of personalized learning was also a shared priority. Specifically ed-tech products were viewed as tools to support teaching by diversifying instruction and focusing on the needs of individual learners. Those interviewed across subgroups viewed the use of assessment data to understand learner needs as the most important aspect of personalized learning, followed by the development of personal learning paths. For example, participants commented on using data to adapt content to learner needs. Competency-based progression was viewed as the third most important dimension of personalized learning, whereas offering flexible learning environments through blended learning and forming groups based on data was perceived as less important than the other aspects.

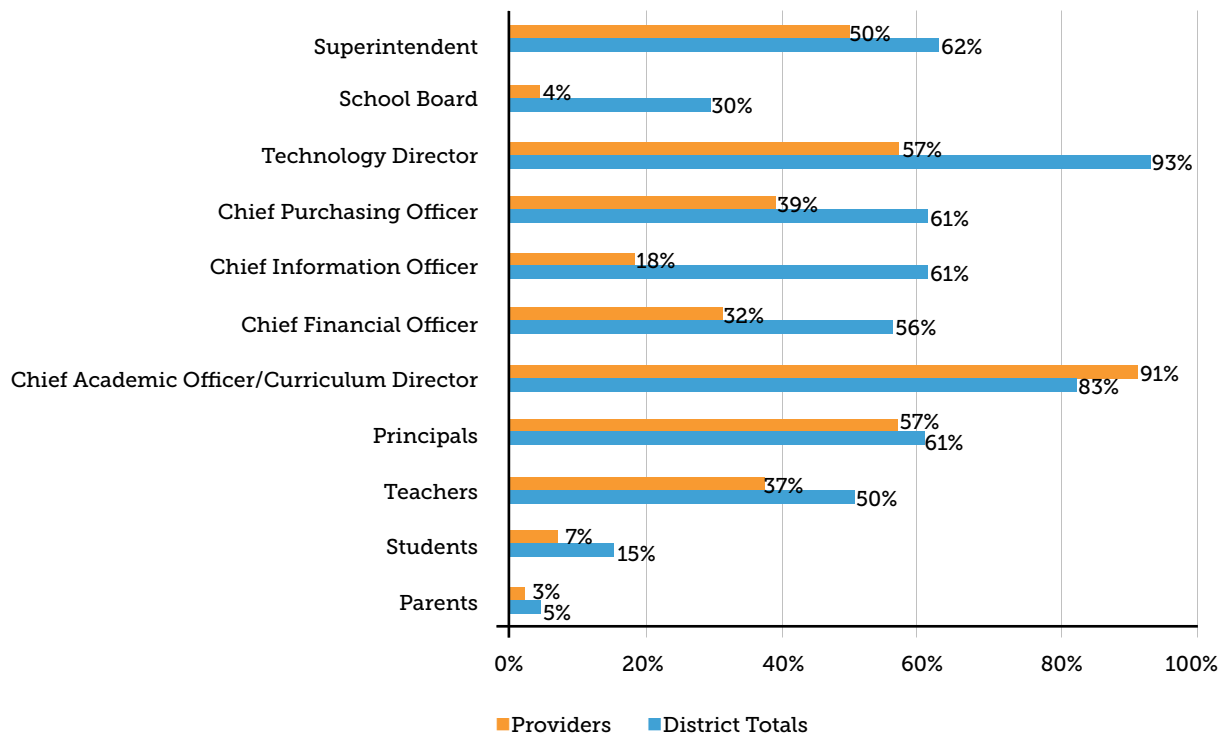
Who's involved in procurement, more or less? Identifying classroom needs for ed-tech products requires information from many sources. As just noted, student achievement scores represent the most obvious and salient data regarding the success of teaching and learning in different subject areas. The challenges of personalizing learning, however, create many other potential needs, in areas such as student social-emotional development, self-efficacy, learning skills, and motivation, and facilitating teachers' efforts to record and analyze assessment data.

Arguably, the end-users (teachers and principals) are key sources for identifying where ed-tech support in these and other areas is most essential. But, in reality, to what degree are they involved? In the present study, all participants responded to a series of survey items that assessed the degree of involvement by various stakeholders in ed-tech procurement (see Figure 5). District participants rated

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the technology director⁴ as having the greatest involvement, followed by the chief academic officer and then the superintendent. In contrast, providers reported the chief academic officer being most involved, followed by principals, and then the technology director. Compared to all district participants, providers viewed technology directors as significantly less involved. They also viewed the chief financial officer as significantly less involved than did all district participants (except business officers). Notably, teachers were rated as having only a moderate involvement, and principals as slightly more involved than teachers. Not surprisingly participants reported the lowest involvement of parents in ed-tech procurement, followed by students.

Figure 5. Participant frequency of moderate-extensive and extensive responses regarding the involvement of various stakeholders.

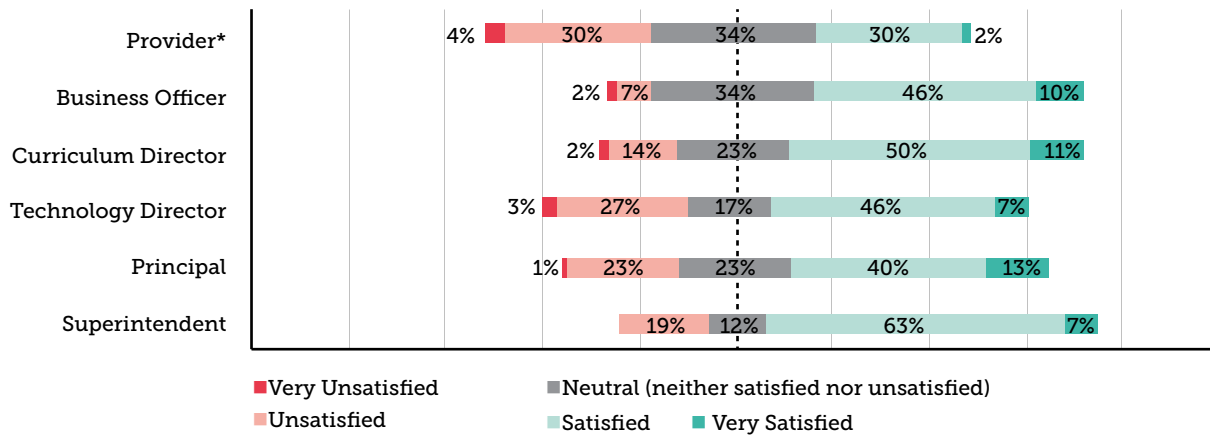


The survey also examined the degree to which participants were satisfied with end-user involvement. Results revealed mostly neutral reactions (see Figure 6). A significant difference was found between superintendents, curriculum directors, and business officers, who were more neutral to satisfied with end-user involvement, and providers, who were more neutral to unsatisfied.

⁴ While positions (e.g., Technology Director and Chief Information Officer, Chief Purchasing Officer and Chief Financial Officer) may be considered equivalent in districts, these positions were not consolidated for the analysis, as participants were provided with an option to select “not applicable” if the position did not exist within the district.

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Figure 6. Frequencies of responses to the survey item assessing satisfaction with end-user involvement.



While the survey results reflected only moderate satisfaction by participants (and least for providers) with the involvement of end-users, representatives of all groups stressed in interviews the importance of end-users, specifically teachers, to the procurement process due to their understanding of student needs, and in encouraging teacher use of selected products. A superintendent commented on the importance of end-users recommending products:

Because they (teachers) are the implementers, the ones closest to our students, they need to see the value and must have buy-in, not something shoved from the top down.

Further, a curriculum director stated, “End-users help to determine the need and they provide input on the products considered,” while another curriculum director stated that, “sometimes an individual successfully implements something in their location and it can become district-wide if it’s functioning well.” During discovery (*Action Point III*), end-users were viewed as highly valuable in identifying products that may then be evaluated at the district level, and in product evaluation (*Action Point IV*) through participating in pilots or demonstrations.

Implications. Nearly all ed-tech products are acquired based on some type of needs assessment. The present findings suggest that such assessments are frequently informal decisions by district administrators such as technology directors and curriculum directors, and are largely focused on bolstering student achievement in certain areas and facilitating efforts by teachers to use assessment data for personalizing instruction. Formal needs assessments, involving, for example, surveying teachers and principals, using rubrics or rating scales to determine priorities, or convening review teams to collect data and share findings, seem much rarer. Although teachers and principals arguably have the sharpest insights into instructional needs, they appear to be only “moderately” involved in this capacity (and, as later findings suggest, more so in smaller than larger districts). Consequently, the end-users’ contribution is diminished (relative to its potential) at the front-end, which is likely detrimental to their subsequent involvement in later phases (i.e., discovery and evaluation).

Hypotheses:

- ▶ Use of structured, formal needs assessments would result in more effective ed-tech product acquisitions by specifically defining what types of supports best address existing gaps and needs.
- ▶ Increased involvement of end-users would strengthen needs assessments, while increasing their interest in and support for subsequent phases of the procurement process.

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- ▶ Increased involvement of end-users would improve providers' attitudes toward the procurement process by expanding communication channels about instructional needs beyond contacts with the few district administrators having procurement purview.

Possible Solutions:

- ▶ Tools to guide and formalize the needs assessment process.
- ▶ Strategies and tools to integrally involve end-users in providing input and making decisions about instructional needs.

Action Point III: Discovery of Ed-Tech Products



The challenge of identifying products to meet an instructional need, as well as the variety of ed-tech options available, was a common theme for district participants in survey responses. Second to the challenges of funding, superintendents emphasized the difficulty of sorting through the products available. For example, one superintendent noted “constant changes in technology,” while another referenced the “challenge up keeping up with latest technologies because it changes so rapidly.” Providers also commented on the “overwhelming amount of products on the marketplace,” and the challenge of gaining, “awareness.”

Interview responses by district participants further emphasized the challenge districts experience with finding and differentiating between suitable products. A technology director commented, “It is impossible to be aware of every piece of valuable educational software,” while a superintendent stated that the, “quantity of vendors is both a blessing and a curse.” Further, a business officer equated the growing number of ed-tech options to the “.com explosion.” The vast number of options was also commented on by a technology director:

[There is so much change and movement in the market. It’s hard to keep pace and determine the best approach.]

Providers echoed this struggle, in that the most common challenge in interviews also centered on product discovery. These challenges included targeting their efforts based on district needs and getting in front of the right people responsible for decisions. For example, a provider noted the lack of a means to identify districts that might be receptive to their products. Another provider commented on the difficulty of “getting in front of the right people initially,” due to the company’s lack of brand recognition, and recognized that districts “don’t have the time to evaluate all programs out there.”

Implications. Discovery is a serious challenge for both school districts and providers, especially those providers who are less established. Unlike textbook options, which are relatively small in number and produced by generally well-known publishing companies, there is a plethora of existing ed-tech products and an ever-growing ed-tech market. Districts in general do not have the capacity (personnel or time) to conduct thorough searches of what is available. Providers in general do not have the capacity or means to broadly expose districts to their products. To the extent that discovery is restricted to a few products that districts happen to identify through searches, peer recommendations, or marketing efforts that reach them, the chances of acquiring the most effective ed-tech solutions can only be diminished. Thus, it is not surprising that in a recent study of teacher attitudes toward ed-tech products they were using,

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the findings indicated overall dissatisfaction (Bill & Melinda Gates Foundation, 2014). Similarly, where discovery is limited, providers struggle to make their products known to district stakeholders. This factor certainly appears to contribute to their general frustration with contemporary procurement processes.

Hypotheses:

- ▶ Where the discovery process is restricted to examining only a few products, larger and more established providers will benefit from brand recognition, whereas smaller and newer providers will be at a disadvantage.
- ▶ Where discovery is expanded to searching for many product options, end-users will be more involved in the process and satisfied with results.

Possible Solutions:

- ▶ Creating a national website to provide information about available products and where they are being used.
- ▶ Establishing regional or state networks where tech directors, teachers, and other stakeholders can meet online or in person to share experiences with particular types of products.
- ▶ Increasing efforts by providers to make their products more visible through marketing activities and involvement with “Accelerators” and other networks (such as EIA and AASA) that can connect them with educators.

Action Point IV: Evaluation of Ed-Tech Products



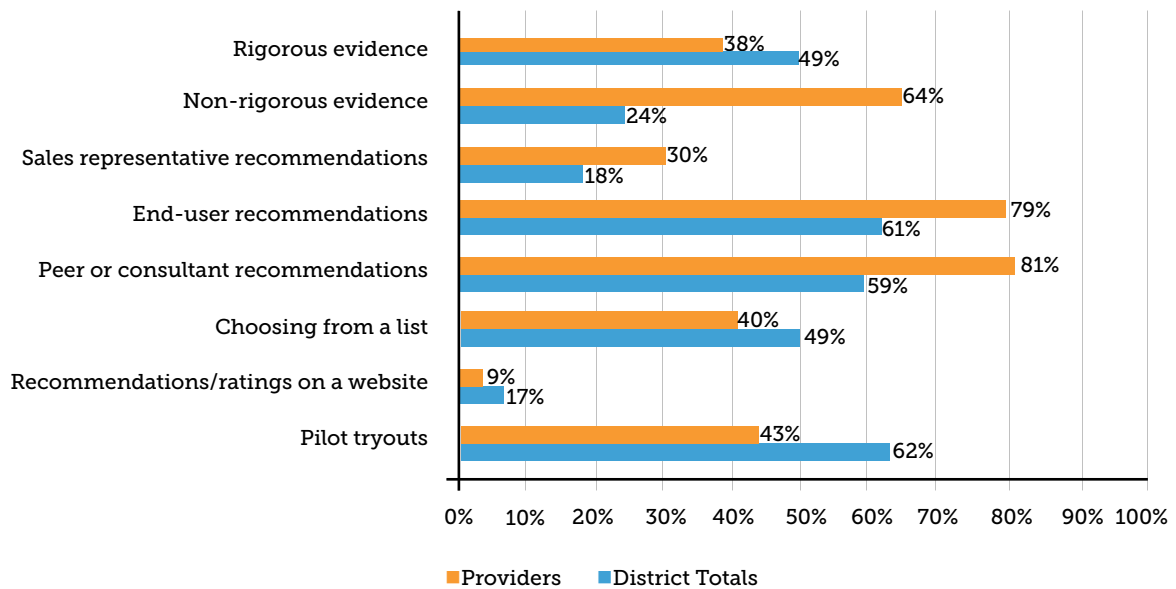
Once potentially suitable ed-tech products are identified, school districts need to more carefully evaluate them with regard to fit with identified instructional needs, effectiveness in delivering the benefits advertised, usability, cost, and other factors. One strategy is to obtain information on product characteristics and quality from external sources. Another is for the district to conduct its own field tests or “pilots.”

Sources of information. District participants in the present study were surveyed regarding their reliance on various sources of information of ed-tech products (see Figure 7). Providers, in turn, gave their opinions about district strategies. Such information could inform not only evaluation, but also discovery (*Action Point III*) to some degree.

District participants, as a whole, reported the greatest reliance on pilot tryouts ($M = 3.77$), recommendations from peers or consultants ($M = 3.67$), end-user recommendations ($M = 3.65$), and rigorous evaluation evidence ($M = 3.37$). Providers also perceived peer or consultant recommendations ($M = 4.13$), end-user recommendations ($M = 3.94$), and pilot tryouts ($M = 3.32$) to be common sources for districts, while believing that districts strongly relied on non-rigorous evidence ($M = 3.68$).

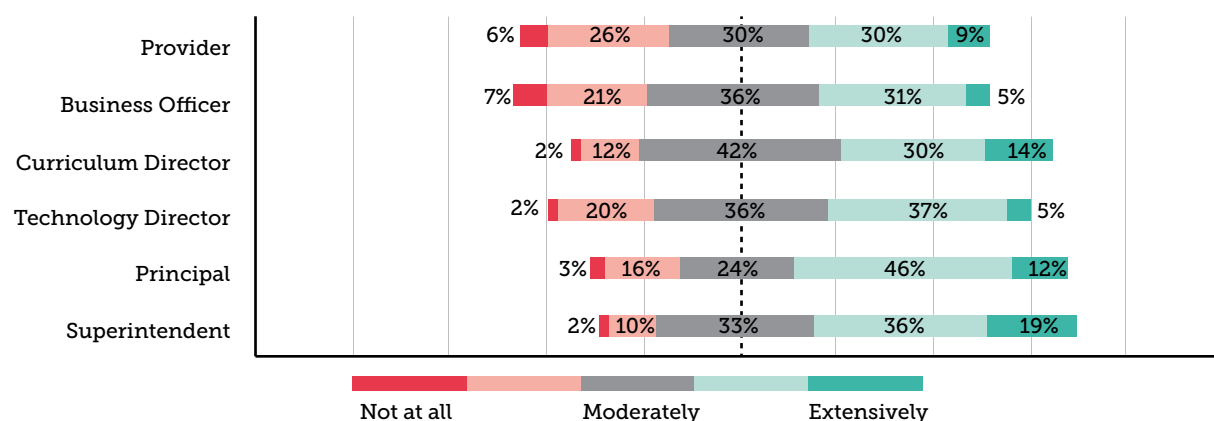
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Figure 7. Frequency of moderate-extensive and extensive reliance on sources of information by district and provider participants.



Whereas the current education policies and literature tout adoption of evidence-based programs, district participants and providers perceived that districts relied on rigorous evaluation evidence⁵ to only a moderate degree when making ed-tech decisions (see Figure 8). Significant differences were not observed between district participant groups, though superintendents viewed rigorous evidence as more influential than other participant groups, whereas business officers viewed it as least influential.

Figure 8. Frequencies of responses assessing degree of reliance on rigorous evaluation evidence (from published studies, literature reviews, etc.).



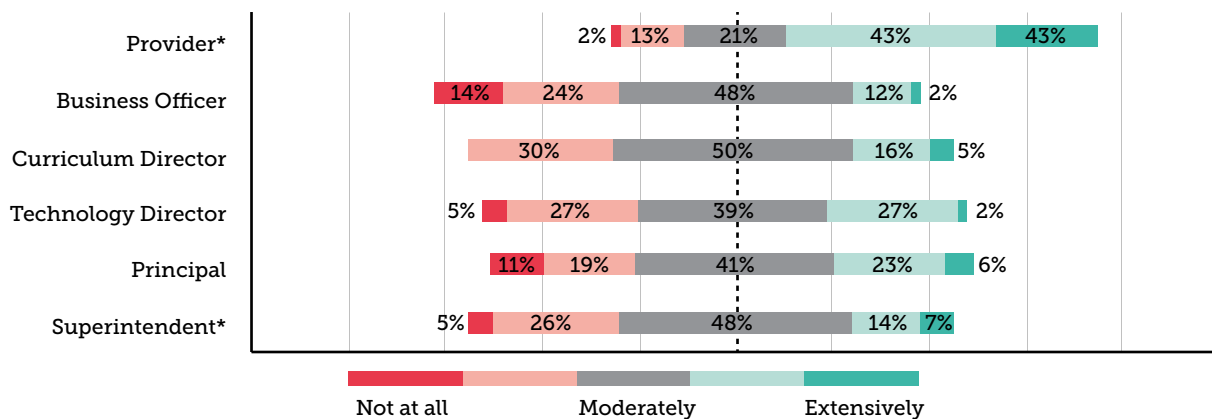
5 In this context, “rigorous” means quasi-experimental and randomized experimental studies that compare product effects to those of a highly similar comparison treatment, using valid measures and procedures. “Causality” of effects by the treatment can be inferred. Non-rigorous studies typically lack control group comparisons, and thus describe pretest-posttest gains for the product treatment group only. Case studies, descriptive studies, and design-based implementation studies (DBIR) are examples.

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District participants ($M = 2.90$) reported relying on non-rigorous evaluation evidence to a lesser extent than rigorous evaluation evidence (see Figure 9). Providers ($M = 3.68$) were strongest in viewing non-rigorous evidence as influential—significantly more so than all other district participant groups. Because providers frequently use non-rigorous (internally conducted) studies in their marketing materials, and infrequently have commissioned rigorous evaluation studies by independent researchers, this contrast is not surprising.

Figure 9. Frequencies of responses assessing degree of reliance on nonrigorous evaluation evidence (e.g., from providers' in-house studies).

* $p < .001$.

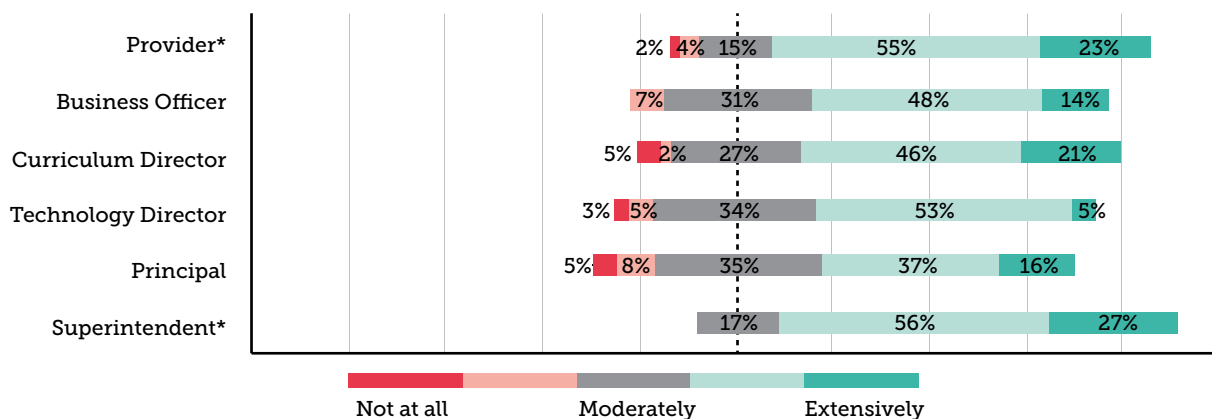


Similarly, district participants reported a low ($M = 2.80$) reliance on recommendations from sales representatives. Providers, though, viewed sales representatives as more influential ($M = 3.02$) than did the district groups.

Participants disagreed on the level of reliance from end-user recommendations (see Figure 10). Superintendents ($M = 4.10$) gave significantly higher ratings than principals ($M = 3.0$) and technology directors ($M = 3.51$). Providers ($M = 3.94$) also believed that reliance on end-user recommendations was higher than did principals and technology directors.

Figure 10. Frequencies of responses assessing degree of reliance on end-user recommendations.

* $p < .01$.



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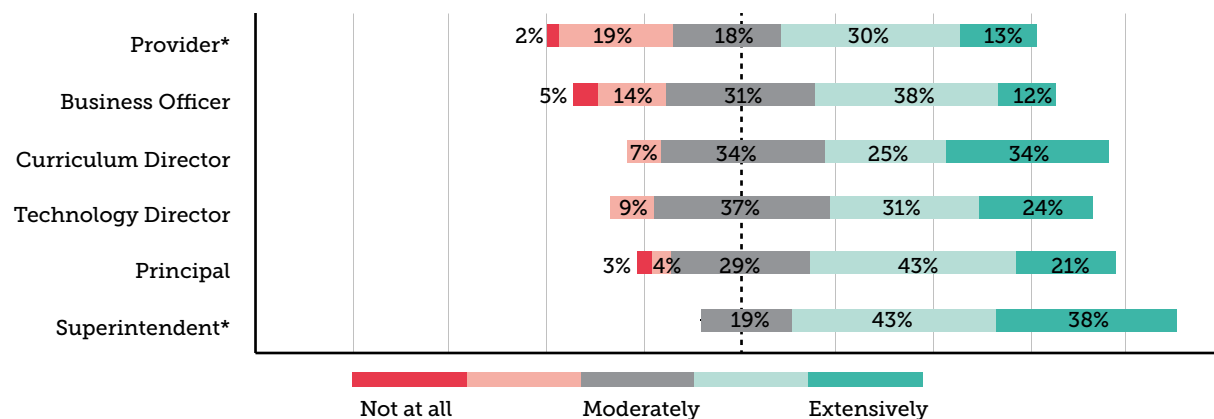
A moderate to extensive reliance on recommendations from other districts or consultants was reported by participants. Superintendents ($M = 4.00$) and providers ($M = 4.13$) reported a significantly higher level of reliance on this information than both business officers ($M = 3.55$) and principals ($M = 3.54$).

All participants reported a moderate reliance on choosing from a list of approved or recognized providers or brands. In addition, a minimal reliance was indicated by all participant groups for relying on recommendations or ratings on an informational website.

Collecting evidence: Piloting products. The above results indicate that school districts actively seek information on product attributes and quality from a variety of sources, most pervasively, recommendations from peer districts and end-users within the district. According to the district participants surveyed and interviewed, another key source of information is collecting information locally from pilots and try-outs (see Figure 11).

Specifically, district participants overall reported a moderate to extensive ($M = 3.77$) reliance on pilot tryouts within the district for ed-tech procurement (see Figure 11). Superintendents ($M = 4.19$) perceived the reliance to be greater than did business officers ($M = 3.38$) and providers ($M = 3.32$). However, on a different survey item asked of providers, providers ($M = 3.06$) were split (34.1% dissatisfied, 40.5% satisfied) regarding their opportunities to conduct pilots in district schools.

Figure 11. Frequencies of responses assessing the degree of reliance on pilot tryouts.



With very few exceptions, district participants noted in interviews the use of pilots in order to evaluate products. It should be noted that interviewers and respondents defined “pilots” generically to mean demos, try-outs, and field tests by ed-tech specialists and other district staff, teachers, and students. Pilots ranged in duration from 30 days to six months and from one classroom to several schools. Providers also viewed pilots positively in terms of leading toward a district purchase. In terms of data collected during pilots, district participants reported obtaining teacher and student feedback, data on usage, and evidence of student growth. Districts primarily reported an informal approach to piloting products. None conveyed conducting formal pilots, as would be characterized by such features as third-party evaluation support, standard measurement instruments, rubrics and rating scales, and structured procedures for gathering data and interpreting results. When asked as to whether they would ever implement a more formal pilot process, interviewees gave mixed views. Several reported that a more formal pilot would be valuable and enable districts to make more informed decisions, whereas others expressed concerns over workload and resources involved. However, the majority of participants agreed that guidelines for conducting a formal pilot would be very helpful.

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Last, on the survey, technology directors and curriculum directors were asked to rate the importance of their own recommendations about ed-tech products. Both participant groups indicated a moderate reliance on their recommendations. Consistent with the greater involvement by technology directors than curriculum directors discussed earlier, technology directors ($M = 3.78$) rated the importance of their own recommendations significantly higher than curriculum directors ($M = 3.12$) rated their own recommendations.

Evidence of effectiveness. The results reported above for *Action Point IV* (“Evaluation”) thus far show fairly high reliance on external peers’ and internal end-users’ perceptions about the quality of particular ed-tech products. The latter group’s recommendations, in turn, appear to be largely based on direct interactions with the products via “informal” piloting activities. District participants, especially superintendents and principals also conveyed on the survey that rigorous evidence of product effectiveness was another important source of information for product selection. For example, 19% of the superintendents surveyed conveyed that they relied upon rigorous evidence extensively whereas nearly all (98%) rated their reliance as at least moderate (a rating of 3–5; see Table 4).

Given ambiguity about what “reliance” on evidence actually entails and the current NCLB-inspired emphasis on accountability and evidence-based practices, there is certainly reason to suspect that many respondents might feel pressured to convey on a survey item that evidence of product effectiveness is substantively considered. Accordingly, interview responses presented much more equivocal and nuanced pictures. On the one hand, when participants were asked to what degree evidence of effectiveness plays a role in product selection, many district participants gave confirmatory responses. A technology director stated:

It (evidence of effectiveness) plays a big role. We’re always looking for what can it do on student engagement and ultimately in student achievement. So, when vendors come and pitch things, that’s really the thing that we ask and most of them are ready to show that anyway.

Further, a superintendent replied that evidence is

Big. Big. We checked out and asked the vendor for test results comparing the vendor product to others. That’s how we narrowed it down.

Other participants commented on the benefit of external evaluations and evidence of product effectiveness, but only if combined with other information, such as recommendations from peers. For example, one curriculum director commented:

[Evidence of effectiveness] does play a role but it’s not the only criteria we look at. So many of these products and services don’t have independent research conducted on them that you know you can find something positive to say about any product that’s out there, and so you really have to be careful between marketing materials and research materials. I have not found a lot of well-conducted research done on too many products. You have to network and ask other districts what they’re using and what they’re happy with because they’re certainly in the field and trying it.

The primary theme that emerged is that rigorous research evidence can be very important, where it exists and where it can be found. The reality is that the vast majority of ed-tech products don’t have any. An additional concern or barrier noted was the contextual relevancy of findings collected in other states from schools having different demographics from their own. In contrast, peer recommendations, particularly when obtained from schools and districts with similar characteristics, enabled participants to consider the potential of product effectiveness and provider support in their own districts in a timely manner. Participants also noted the importance of information demonstrating the alignment of products to district or state standards and goals. For example, of importance is that there is little existing research

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evidence on the effectiveness of any existing ed-tech products for increasing student achievement of Common Core State Standards.

While rigorous evidence of product effectiveness (where it exists) was clearly viewed as relevant and desirable for product selection decisions in the surveys and interviews, district participants were less enthused on the survey about the credibility of product evidence submitted by providers (overall $M = 3.33$).

Providers were neutral ($M = 3.09$) regarding their satisfaction with districts' demands for evidence related to product effectiveness. In contrast, providers agreed ($M = 4.43$) that the development of their products is directly informed by research evidence and educational outcomes. As with district participants possibly feeling pressured to confirm reliance on rigorous evidence in selecting products, we suspect a positive bias here in providers confirming that their products are, in fact, aligned with research evidence and effective practices.

District participants further noted in interviews that the most serious forms of evidence for product selection were sources of information external to provider claims. Participants reported considering product reviews and references, as well as research and evidence of effectiveness.

Providers were also asked to comment in interviews on the product features that resulted in selection by districts. Providers cited alignment to state standards, professional development, ease of use, and the product's impact on student learning. These same product features cited by providers were noted in district participant interviews as factors that influence teachers' usage and integration of ed-tech products acquired.

Do established providers have an advantage? Ostensibly, evaluations of ed-tech products should be based on evidence of quality and effectiveness alone. For school districts, realistically, another consideration is the reputation and experience of the provider. In general, survey responses by superintendents, curriculum directors, and technology directors were neutral ($M = 3.40$) that procurement processes helped the district obtain products even when products were from less established providers or brands. Principals were also neutral ($M = 3.39$) that they were able to pursue products from less-established providers.

Interviews with district participants, however, revealed more mixed perceptions about the risks of obtaining products from emerging providers. Respondents expressed concerns that the newer provider may not offer the same level of customer service and support as a more established brand. Further, emerging providers may have less quality products as compared with established and recognized brands. Participants did acknowledge that some emerging companies have more innovative and engaging products and are willing to adapt product more readily than established brands. Despite the mixed views, our overall impression is that start-ups and less well-known providers have more to prove in the discovery and evaluation phase than their better-known counterparts.

Implications: In the above sections for *Action Point IV*, we have reported results relating to the evaluation of ed-tech products by school districts. Findings indicate that there are no readily accessible sources of "rigorous" evidence on the effectiveness of the vast majority of ed-tech products. As a result, school districts largely depend on recommendations from peers and from their own teachers and principals who have familiarity with the products. Such familiarity frequently comes from participation in pilot studies of selected products. Because the pilots are informal (e.g., demos, brief try-outs, committee reviews), accuracy of the conclusions reached about product quality may be questionable. Most providers have nonrigorous evidence (from in-house evaluations or data analyses) on product effectiveness. But understandably, given providers' interest in selling their products, school districts are hesitant to rely heavily on such information.

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Overall, both providers and school districts are frustrated by what might be described as largely a “hit-or-miss” approach to the vetting of many ed-tech products. Usage of pilots is supported by both stakeholder groups, but barriers include not knowing how to orchestrate and implement useful pilots, and concerns about capacity (staff and budget) to conduct them.

Hypotheses:

- ▶ Districts would be more confident in their evaluations of ed-tech products by systematically integrating information from formal pilot studies, peer recommendations, and external evidence.
- ▶ Due to rigorous research studies’ lacking recency, contextual matching to most school districts, and broad coverage of ed-tech products, they will be less widely used by school districts as evidence for selecting ed-tech products than will pilot studies and peer recommendations.
- ▶ Providers’ experiences and views toward ed-tech procurement would be substantially more favorable if opportunities for participating in district pilots—and therefore having results broadly disseminated—were expanded.
- ▶ Many or most providers, and particularly less-established ones, would agree to pay the cost of districts piloting their products both to have an entry point and to obtain evidence on product quality.

Possible Solutions:

- ▶ Creating guidelines for accessing and interpreting rigorous research evidence.
- ▶ Creating guidelines for conducting formal pilots that are practical, economical, and useful to districts and providers.
- ▶ Creating a national website that provides information on ed-tech products, consumer perceptions, and the results from formal pilots and independent evaluation studies.

Action Point V: Acquisition of Selected Ed-Tech Products



In this culminating phase of the procurement process, the ed-tech products discovered (*Action Point III*) and favorably evaluated (*Action Point IV*) are designated for purchasing. In the following sections, we report results relative to purchasing requirements and activities.

Does it take too long? One important factor in purchasing is the amount of time it takes to acquire a selected ed-tech product. Interview questions dealt with time in general rather than that specific to purchasing. However, from these responses, we can obtain a sense of the parameters of the entire process and certainly as to whether purchasing emerged as a primary cause of time delays and dissatisfaction by stakeholders.

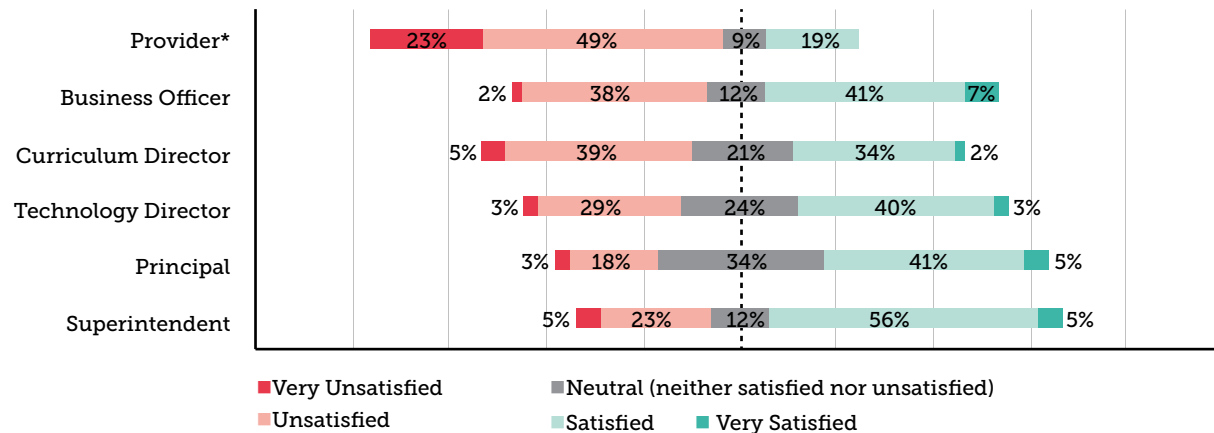
Survey responses of district participants were generally neutral in their satisfaction with the time element (see Figure 12). Superintendents mostly were satisfied (60% satisfied or very satisfied) with the length of time. Technology directors and business officers provided mixed reactions, but more were satisfied than dissatisfied. Curriculum directors, however, were slightly more dissatisfied. Predictably, given costs and uncertainty involved with waiting for contracts to be approved, the only significant group

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difference was the lower provider (with 73.3% indicating dissatisfaction) satisfaction compared to each of the groups.

Figure 12. Frequencies of responses assessing the degree of satisfaction with “The time required to complete procurement processes and bring products to end-users.”

* $p < .001$.



Further, when asked about the amount of time smaller ed-tech purchases require, a timeframe of 1–3 months was reported by superintendents (81%), business officers (93%), and providers (53%). The timeframe for larger purchases was less consistent among these three groups. Superintendents reported a timeframe of 4–6 months (39.13%), whereas business officers reported 1–3 months (56.10%) for larger purchases. In contrast, providers reported that most (31.82%) larger purchases take 10–12 months. In interviews, providers noted that larger purchases typically result in a more formal process that extends the timeframe. We surmise that at least some of the providers completing the survey had limited experiences with larger purchases and were estimating based on what they heard secondhand or expected to occur. We also believe that it was difficult for most respondents to give precise quantitative estimates of time because there are so many different circumstances depending on the size of the purchase (with the small vs. large categories, type of product, and funding source [grant-related vs. internal budget, etc.]). Further, respondents may have differing perceptions as to when the procurement process begins. For example, providers may start the timeline with their initial sales meeting, whereas buyers may start after they have defined needs and reviewed provider options.

The equivocal degree of satisfaction with time reflected in survey responses was corroborated through interviews with district participants. District officials acknowledged that adequate time is needed in order to make informed decisions. A few aspects of the procurement process, however, were noted as taking more time than others. Extensive time is devoted to searching for products, and to thoroughly evaluating and piloting potential products for acquisition. Meeting school board or state requirements do not appear, based on interviews, to extend time substantively.

In addition, some district participants indicated in interviews that ed-tech procurement was not restricted to certain intervals during the year, whereas others noted specific windows for ed-tech procurement. These windows were often referenced in terms of budget cycles for the district or the school. Thus, unfortunately for providers, there does not appear to be national consistency with using purchasing windows or scheduling them. Each district targeted for selling would need to be researched separately, although there are some more commonly used budget cycles worth identifying.

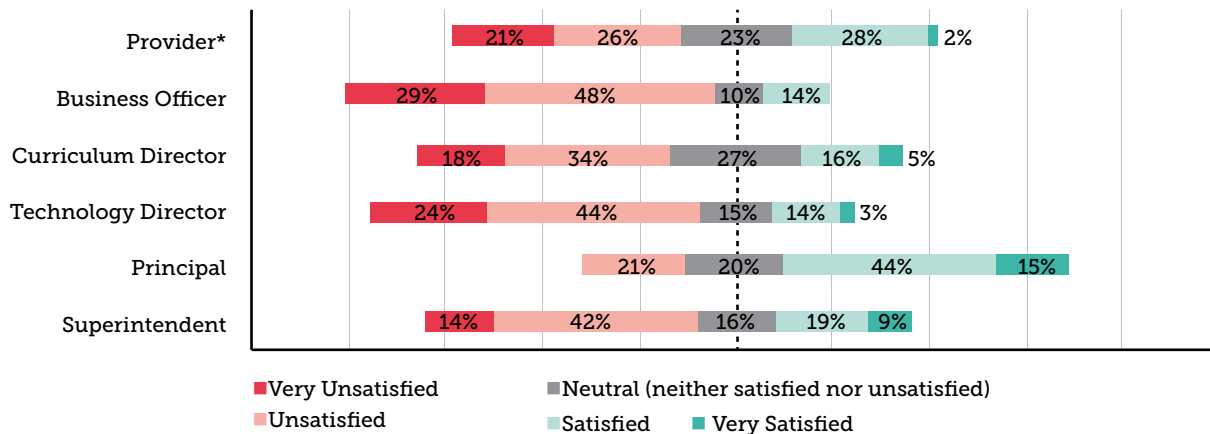
School purchasing. District participants generally disagreed with the survey item pertaining to the desirability of decentralized school procurement processes, with the exception of principals (see Figure 13). Predictably, principals were significantly more likely than other groups to support school autonomy

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as beneficial for ed-tech procurement. Whereas 59% of the principal sample agreed or strongly agreed, the other groups ranged from only 14% (business officers) to 30% (providers) agreement.

Figure 13. Frequencies of responses assessing level of agreement with “Decentralized school procurement processes (significant school autonomy) are desirable for acquiring needed ed-tech products.”

* $p < .001$.



District participants further elaborated in interviews on whether schools could control the selection and acquisition of ed-tech products within their individual school districts. Participants preferred a balanced process of allowing school purchasing with district oversight. For example, in some districts, schools may acquire supplemental ed-tech products with approval from the district office. A technology director explained a process where,

teachers identify a product in a content division, then the division lead goes to the curriculum coordinator. Instructional technology and technology systems supervisors verify it works in the environment.

In other districts, however, all purchases are controlled at the district level. Participants noted the importance of providing consistency to students across schools. For example, a technology director noted, “We want to keep it the same for the kid who might go to three or four elementary schools within one year. So we really do try to keep it consistent.” In addition, district participants cited the need to avoid redundancy of products that may arise due to decentralized purchasing. For example, a business officer commented:

One of the big issues that you run into is that the schoolhouse will always claim that their kids are different from every other group of kids throughout the school system, and that may not necessarily be the case.

Satisfying district, municipal, and state policies. Making the actual purchases, particularly larger ones, of the selected product requires meeting expectations and approval requirements at different levels—superintendent, school board, city, and state. According to the providers who were interviewed, superintendent involvement in procurement in general varies considerably from district to district. Some providers perceived superintendents as having a prominent role, and others indicated that they seem less involved than other members of the district office. These perceptions suggested that product attributes (e.g., cost, uses, etc.) district characteristics, the involvement of other stakeholders, and personal interests were the determining factors.

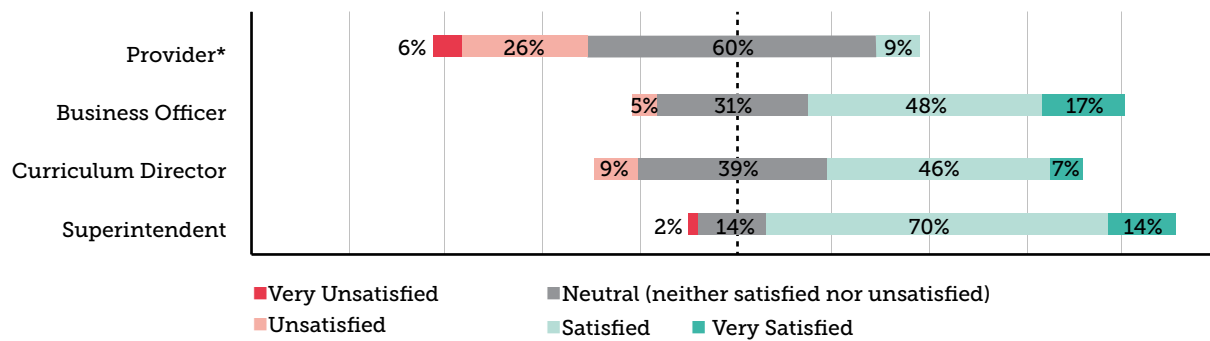
FINDINGS

Survey participants in all groups described the school board as only slightly to moderately ($M = 2.81$) involved in ed-tech procurement. District participants were neutral to satisfied with their involvement (see Figure 14). In contrast, almost one-third of the providers were unsatisfied and, as a group, significantly less satisfied than were superintendents, curriculum directors, and business officers. Also, superintendents (84% satisfied) were significantly more positive than curriculum directors (52% satisfied).

A range of financial triggers of ed-tech product purchases was reported by business officers. Over one-third (38%) reported that purchases between \$11,000 and \$25,000 required school board approval whereas 21% indicated school board approval was not required for ed-tech procurement. Providers noted in interviews that the school board was often involved with approval of purchases and providers would occasionally present to the school board as part of this approval process.

Figure 14. Frequencies of responses assessing the school board's degree of involvement.

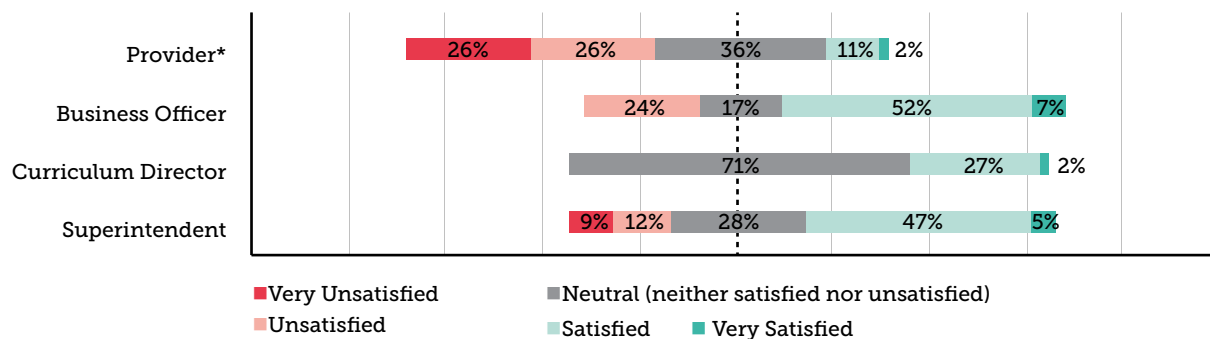
* $p < .001$.



As to state or municipal laws that govern procurement processes, district participants were neutral in their satisfaction, but providers were significantly less satisfied (see Figure 15). In interviews, district participants were mixed in their perceptions of whether procurement practices were restricted by state laws. While many stated they did not feel restricted, several participants note some negative factors related to the purchasing process. For example, state laws in some districts create additional workload, or the state might require the district to obtain a product with the lowest bid rather than the product with the best value.

Figure 15. Frequencies of responses for the degree of satisfaction toward state or municipal laws that govern procurement processes.

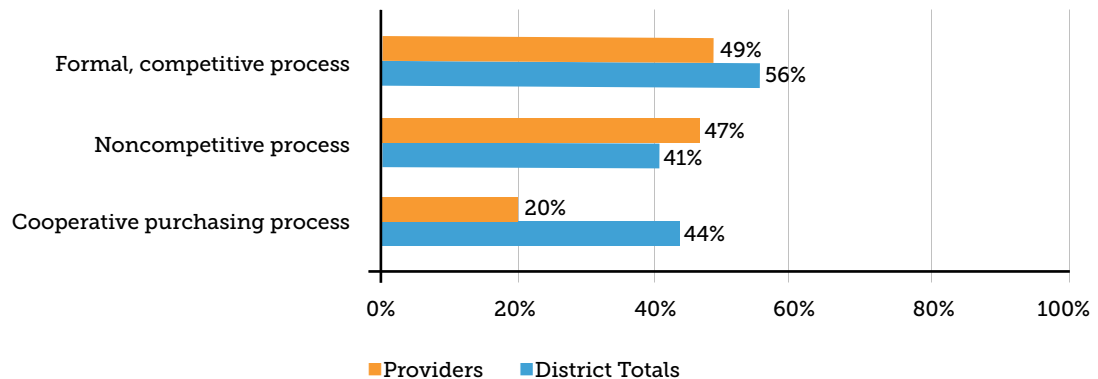
* $p < .001$.



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How acquisitions are made. Regarding acquisition modes employed for procurement, participants indicated a moderate reliance on a formal, competitive process (e.g., RFP) and a moderate reliance on a noncompetitive process (e.g., sole source or other) (see Figure 16). A cooperative purchasing process was utilized to a lesser extent, though business officers indicated significantly higher reliance than did providers.

Figure 16. Frequency of participants' moderate-extensive and extensive responses to reliance on purchasing processes.



In interviews, district participants were asked to describe the factors that resulted in a formal versus an informal process. The majority of participants reported typically employing an informal process (i.e., without issuing an RFP) due to either the exception of ed-tech software to state laws and requirements, or due to ed-tech purchases not meeting the higher purchasing threshold that might trigger a more formal process. Several interviewees indicated that the district usually preferred to employ a more formal process involving RFPs. For example, a business officer commented on RFPs as follows:

[The RFP] forces the providers to compete, and I don't think that's a bad thing. I think we, as school divisions, are accountable for taxpayer money and we should be doing everything to make sure we're getting the best product at the lowest possible cost. So, [providers] have to compete if it's an RFP – they can't just kind of befriend the purchasing person or kind of make a deal; they have to actually walk that deal through the process.

Providers indicated that an informal process was used by districts, particularly for smaller purchases, and also arranged sole-source contracts due to the uniqueness of their product.

In general, district participants reported being fairly satisfied with both the competitive procurement process and the noncompetitive procurement process. Providers, however, were unsatisfied at the lack of systematic opportunities to expand from pilots to a broader implementation without a complicated procurement process or RFP.

Other results suggested a communication or knowledge gap between districts and providers. While superintendents ($M = 3.47$) and business officers ($M = 3.62$) were mostly neutral in terms of their satisfaction with providers' knowledge of purchasing policies, providers reported being unsatisfied ($M = 2.23$) with the information provided by districts regarding buying cycles and purchasing policies. Providers' survey responses were also neutral ($M = 3.55$) about whether product development was influenced by expected requirements of district procurement processes.

FINDINGS

Use of RFPs. Requiring providers to respond to an RFP straddles the evaluation and acquisition phases, and even to some degree discovery, as products unfamiliar to the district are introduced and promoted in providers' application. Because the RFP process extensively involves the business office and usually concludes with a fairly immediate contract for the chosen provider, we considered it appropriate to present associated results as part of *Action Point V*.

Interviews with district participants revealed mixed views on the use of RFPs. Benefits of using a more formal RFP process included obtaining improved pricing through competition and encouraging districts to clearly establish product requirements prior to evaluating products. District participants also noted, however, the increased workload involved in crafting the RFP, as well as the effort required by providers to respond to the RFP.

District participants were also asked through the survey whether the district would be willing to use standardized RFPs and contract documents that reflect best practices nationally. Business officers agreed ($M = 4.10$) and were significantly more positive than curriculum directors, who were more neutral ($M = 3.61$). Technology directors ($M = 3.63$) and superintendents ($M = 3.72$) were also fairly neutral, but did not significantly differ from other groups. In a related survey item, providers ($M = 3.30$) were neutral in their agreement that using standardized RFPs and contract documents would be desirable in improving procurement processes. District participants did agree in interviews, however, that RFP templates would be helpful. A business officer commented, "RFP templates would be helpful. RFPs are very technical and hard to put together." Another business officer commented that templates would be helpful as the district is currently "hand crafting each RFP based on outdated or old RFPs."

Implications: In beginning this study, differing opinions—but clearly some strong concerns—were voiced by members of our Technical Advisors and from informal conversations with providers and school district personnel at conferences (e.g., Education Industries Association, American Association of School Administrators, the League of Innovative Schools), about the efficiency and quickness of purchasing chosen products. Results of the present study, at least from the district side, were more accepting of RFPs and serving a useful purpose when employed. Although few district stakeholders appear to feel that purchasing cannot or should not be done more quickly, there was moderate satisfaction with current timeframes by most district participant groups, especially superintendents. Nor were concerns raised in informal discussions about school board, municipal, or state restrictions borne out by district respondents. In fact, the involvement by school boards was rated more positively than negatively. Even RFPs, which require additional time and work by district personnel were viewed by some interviewees as beneficial for vetting providers and their products. Usage of RFPs, even in more formal procurement processes, however, seem rare for ed-tech courseware products compared to hardware acquisitions.

Providers were much less satisfied than were district participants with procurement timeframes and additional compliance criteria (school board, municipal, state, RFPs) that potentially extend time and costs for them to sell their products. Neither de-centralized nor cooperative purchasing received strong support as desirable purchasing strategies.

Hypotheses:

- ▶ Provider satisfaction will increase if better informed by school districts about purchasing requirements and anticipated timelines.
- ▶ Acquisition timeframes can be decreased by developing more streamlined RFPs tailored specifically to the attributes of ed-tech products used for classroom instruction and fit with instructional needs.

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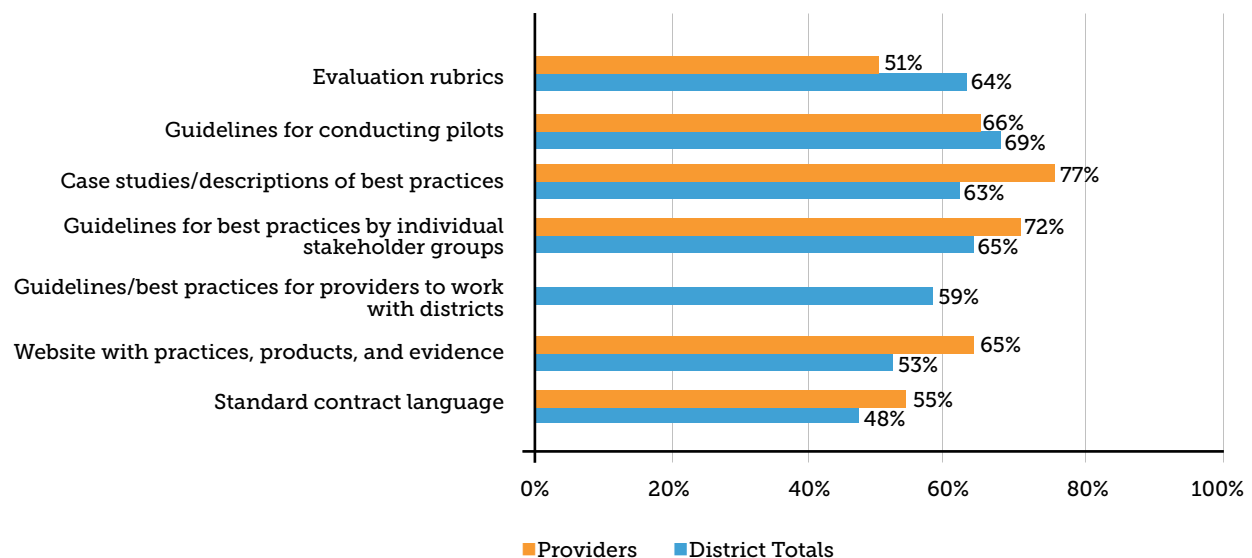
Possible Solutions:

- ▶ Developing district guidelines and other communications that clarify acquisition processes, contracting, RFP policies, and expected timeframes for different types of purchases.
- ▶ Developing expedited or simplified RFP processes and forms tailored to ed-tech instructional products.
- ▶ Educating school boards and states about the unique conditions and needs for acquiring ed-tech software vs. hardware products.
- ▶ Increasing the use of pilots that expedite timely broad-scale purchasing of selected products without new RFP or other formal processing requirements.

Ways of Improving Ed-tech Procurement

Within and across all *Action Points*, there are naturally ways of facilitating school districts' and providers' procurement activities. Some ideas were offered as "Possible Solutions" in the Action Point sections above. On their respective surveys, participant groups were asked their opinions about the helpfulness of various tools and information (see Figure 17).

Figure 17. Frequency of participants' moderate-extensively and extensively helpful responses to potential information and tools.



District and provider participants viewed the suggested tools and resources as moderately to extensively helpful, though specific suggestions were viewed as more helpful than others. In group-specific analyses, guidelines for conducting effective pilot studies were perceived as most helpful by curriculum directors, technology directors, principals, and providers. These guidelines were also referenced positively in interviews. Brief case studies or descriptions of "best practices" for ed-tech procurement by school districts were viewed as helpful by superintendents, technology directors, and providers. Superintendents and principals indicated that guidelines for best practices by individual stakeholder groups would be helpful. Curriculum directors indicated that standard evaluation rubrics for judging the quality of products (based on sound instructional design principles) would be most beneficial, and business officers believed that a national website providing information on procurement practices, product availability, and evidence would be most helpful.

FINDINGS

Though a national website with product information and reviews was not rated as highly as several other options on the closed-ended items, it emerged in the open-ended items as the most strongly expressed need across all district participants. Such a website was viewed as a potentially valuable resource for obtaining information about products, experiences of other districts using products, and a general means of learning about best practices of ed-tech procurement. This same need was expressed most often in interviews with both district participants and providers. District participants expressed the desire for independent reviews, third party evaluations of products, and a resource to compare all of the available products in one location. A curriculum director stated the desire for “third party, independent evaluations not given to you from a vendor,” while another noted the need for “peer reviewed articles or meta-analysis showing the actual effectiveness of products being sold.” A technology director stated:

A trustworthy clearinghouse is needed to learn about products and other districts with reviews written by people other than the companies themselves. There are teacher-led communities that share best practices, but not one big player as a go-to resource.

Similarly, a curriculum director commented on the need for a mechanism to aid one “to sort through vendors based on factual data and alignment to needs.”

Providers acknowledged the lack of a single source to showcase their products to districts. A provider commented that they,

need an easier way to share between districts what works and doesn't work. There's lots of time involved in sharing information about our product. There isn't an easy way to target and show districts the product.

In open-ended survey responses, both technology directors and providers expressed needs related to standards and guidelines for purchasing ed-tech products, including standard contracts and a means to learn about RFPs sooner and through a central source.

In addition, providers viewed guidelines for district expansion after the pilot phase without a new competitive procurement process and policies for district contracting without a RFP process as very helpful. Within an open-ended survey item soliciting needs to improve ed-tech procurement, providers most strongly referenced a need for information on district procurement specific to district needs, decision-making personnel, and the procurement process within each district. This interest, however, would be challenging to address on a broad (national) basis given the multitude of districts and changes in policies and personnel over time.

Comparison Between Smaller and Larger Districts

Supplementary analyses were conducted to answer research question 1c: What does the ed-tech procurement process look like for district participants within smaller districts as compared to larger districts?

In the next analysis, we examined if stakeholder responses varied by the size of the district in which they were located. The size of the district—either Small ($n = 144$) or Large ($n = 147$)—was derived based on the student enrollment. We used the median enrollment (11,147) to split the districts into two groups. There were five possible types of stakeholders (superintendents, principals, technology directors, curriculum directors, and business officers). However, not all stakeholder types were asked each question. Providers were not included in these analyses because they are not linked to specific districts. Descriptive statistics and frequencies of responses for all closed-ended survey items may be found in Appendix G.

As an overview, participants within small districts reported a directionally higher level of satisfaction to aspects of the procurement process on 11 out of 12 items. However, relatively few of the analyses yielded significant differences; those that did are reviewed in the following section.

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General perceptions of the process. Although for all groups combined there were no significant differences in satisfaction toward the procurement process between small ($M = 3.76$) and large districts ($M = 3.64$), differences were found in level of agreement that the procurement process meets contemporary needs. Small districts ($M = 3.65$) were significantly more in agreement to this survey item as compared with large districts ($M = 3.37$). Although there were no significant differences between participant groups, it is noticeable from the summary statistics in Table 1 that every small-district subgroup (except curriculum directors) had higher agreement than their large-district counterparts. For example, 87% of superintendents of small districts agreed or strongly agreed compared to 50% of those of large districts.

Table 1
Descriptive Statistics and Frequencies of Responses Assessing Level of Agreement That District Procurement Processes Meet Contemporary Needs

STAKEHOLDER	Strongly Disagree	Disagree	Neutral or Undecided	Agree	Strongly Agree	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small District							
Superintendent	0.0	8.7	4.3	78.3	8.7	3.87	0.70
Principal	0.0	7.8	35.3	37.3	19.6	3.69	0.88
Technology Director	3.6	17.9	17.9	50.0	10.7	3.46	1.04
Curriculum Director	4.5	9.1	22.7	59.1	4.5	3.50	0.91
Business Officer	0.0	20.0	10.0	50.0	20.0	3.70	1.03
Total Small District	1.4	11.8	21.5	51.4	13.9	3.65 ^a	0.91
Large District							
Superintendent	5.0	25.0	20.0	50.0	0.0	3.15	0.99
Principal	0.0	23.1	19.2	46.2	11.5	3.46	0.98
Technology Director	0.0	29.0	22.6	35.5	12.9	3.32	1.05
Curriculum Director	0.0	18.2	18.2	54.5	9.1	3.55	0.91
Business Officer	0.0	27.3	27.3	40.9	4.5	3.23	0.92
Total Large District	0.7	24.5	21.1	44.9	8.8	3.37	0.97

^a Small districts scored higher than large districts, $p = .01$.

Time. Smaller districts ($M = 3.31$) were significantly more satisfied, though still neutral, with the amount of time required to complete procurement processes as compared to larger districts ($M = 3.03$). Differences between participant groups were not significant. As shown in Table 2, the superintendents and curriculum directors of the smaller districts were directionally (not significant) the most satisfied compared to their counterparts in other districts. When asked the approximate time taken for small and large purchases, business officers in small and large districts were fairly consistent with responses, indicating that the majority of small and large purchases take approximately 1–3 months. Superintendents in small and large districts were also consistent, approximating 1–3 months for small purchases. For large purchases, though, a slightly higher frequency of superintendents in small districts (77.27%) indicated less than six months than superintendents in large districts (65%). Superintendents in small districts indicated an average of eight months for large purchases, whereas those in large districts indicated an average of 13 months.

FINDINGS

Table 2
Descriptive Statistics and Frequencies of Responses Assessing the Degree of Satisfaction Toward the Time Involved with Ed-tech Procurement

STAKEHOLDER	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	4.3	13.0	13.0	65.2	4.3	3.52	0.95
Principal	0.0	19.6	33.3	41.2	5.9	3.33	0.87
Technology Director	0.0	25.0	32.1	39.3	3.6	3.21	0.88
Curriculum Director	4.5	36.4	9.1	50.0	0.0	3.05	1.05
Business Officer	0.0	30.0	15.0	40.0	15.0	3.40	1.10
Total Small District	1.4	23.6	23.6	45.8	5.6	3.31 ^a	0.94
Large District							
Superintendent	5.0	35.0	10.0	45.0	5.0	3.10	1.12
Principal	5.8	15.4	34.6	40.4	3.8	3.21	0.96
Technology Director	6.7	33.3	16.7	40.0	3.3	3.00	1.08
Curriculum Director	4.5	40.9	31.8	18.2	4.5	2.77	0.97
Business Officer	4.5	45.5	9.1	40.9	0.0	2.86	1.04
Total Large District	5.5	30.1	23.3	37.7	3.4	3.03	1.02

^a Small Districts scored higher than Large Districts, $p = .03$.

Sources of information. Significant differences were observed between small and large districts on the degree of reliance for sources of information in the identification, evaluation, and acquisition of ed-tech products.

- ▶ Small districts ($M = 3.75$) reported relying on end-user recommendations to a significantly greater extent than large districts ($M = 3.56$).
- ▶ Directionally (not significant), superintendents, curriculum directors, business officers, and principals within small districts indicated higher reliance on end-users than those in larger districts. However, technology directors in smaller districts ($M = 3.46$) indicated less reliance than those in larger districts ($M = 3.55$).
- ▶ Large districts ($M = 3.49$) reported a significantly greater reliance on choosing from a list of providers and brands (see Table 3) than small districts ($M = 3.13$).
- ▶ Technology directors and principals in large districts indicated a significantly greater reliance on choosing from an approved list of providers as compared to their counterparts in small districts.

FINDINGS

Table 3
Descriptive Statistics and Frequencies of Responses Assessing the Districts' Degree of Reliance on Choosing from a List of Approved Providers or Brands

STAKEHOLDER	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small District							
Superintendent	9.1	9.1	27.3	50.0	4.5	3.32	1.04
Principal	7.8	15.7	41.2	31.4	3.9	3.08	0.98
Technology Director	14.3	25.0	35.7	21.4	3.6	2.75	1.08
Curriculum Director	4.5	22.7	31.8	31.8	9.1	3.18	1.05
Business Officer	5.0	5.0	30.0	50.0	10.0	3.55	0.95
Total Small District	8.4	16.1	35.0	35.0	5.6	3.13	1.03
Large District							
Superintendent	0.0	10.5	42.1	47.4	0.0	3.37	0.68
Principal	1.9	3.8	28.8	53.8	11.5	3.69 ^c	0.81
Technology Director	0.0	12.9	19.4	54.8	12.9	3.68 ^b	0.87
Curriculum Director	4.5	22.7	22.7	45.5	4.5	3.23	1.02
Business Officer	9.1	13.6	40.9	31.8	4.5	3.09	1.02
Total Large District	2.7	11.0	29.5	48.6	8.2	3.49 ^a	0.90

^a Large Districts scored higher than small districts, $p < .01$.

^b Technology directors in large districts scored higher than those in small districts, $p < .01$.

^c Principals in large districts scored higher than principals in small districts, $p < .01$.

Last, the use of pilot tryouts in the identification, evaluation, and acquisition was significantly different between stakeholders within small and large districts (see Table 4). Principals in smaller districts reported a greater reliance on pilots than those in larger districts. In contrast, technology directors in small districts reported relying on pilots to a lesser extent than those in large districts. Looking at Table 4, even these significant differences do not appear very striking. One could surmise that large districts conduct more pilots because of their size. Technology directors in large districts would be aware of the number of pilots, but principals might only know of those conducted in their schools.

FINDINGS

Table 4
Descriptive Statistics and Frequencies of Responses Assessing the Degree of Reliance on Pilot Tryouts

STAKEHOLDER	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small District								
Superintendent	0.0	0.0	9.1	36.4	54.5	4.45	0.67	
Principal	2.0	5.9	23.5	45.1	23.5	3.82	0.93	
Technology Director	0.0	7.1	50.0	28.6	14.3	3.50	0.84	
Curriculum Director	0.0	9.1	27.3	18.2	45.5	4.00	1.07	
Business Officer	5.0	15.0	35.0	25.0	20.0	3.40	1.14	
Total Small District	1.4	7.0	28.7	33.6	29.4	3.83	0.98	
Large District								
Superintendent	0.0	0.0	30.0	50.0	20.0	3.90	0.72	
Principal	3.8	1.9	34.6	40.4	19.2	3.69 ^a	0.94	
Technology Director	0.0	9.7	25.8	32.3	32.3	3.87 ^b	0.99	
Curriculum Director	0.0	4.5	40.9	31.8	22.7	3.73	0.88	
Business Officer	4.5	13.6	27.3	50.0	4.5	3.36	0.95	
Total Large District	2.0	5.4	32.0	40.1	20.4	3.71	0.92	

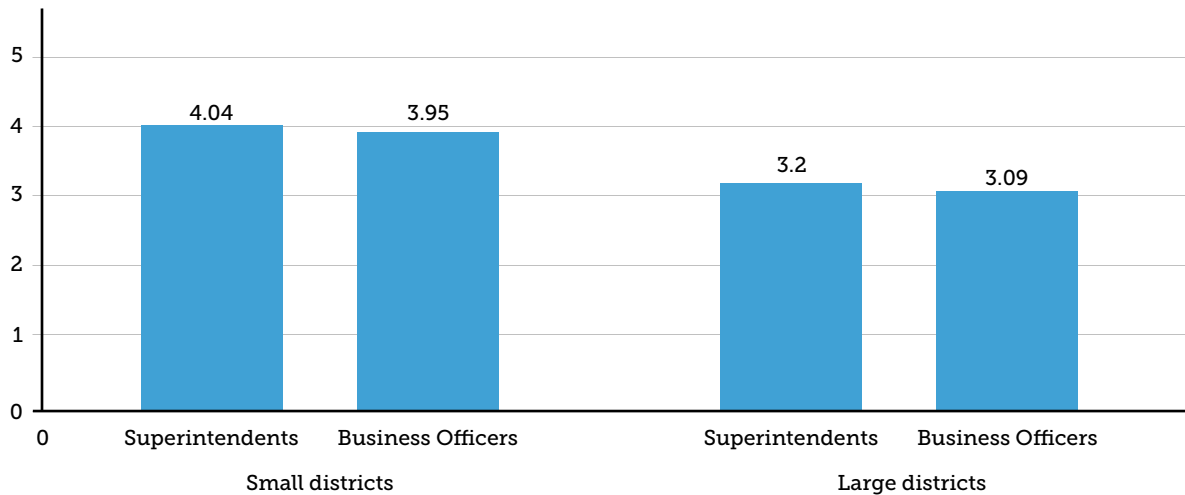
^a Principals in small districts scored higher than principals in large districts, $p = .42$.

^b Technology directors in large districts scored higher than those in small districts, $p = .11$.

Stakeholder involvement. Teachers were perceived overall (all groups combined) as having a significantly greater level of involvement in smaller districts ($M = 3.60$) than larger districts ($M = 3.34$). Superintendents and business officers in smaller districts indicated that teachers had moderate to extensive involvement, whereas those in larger districts indicated only a moderate level of involvement (see Figure 18).

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Figure 18. Mean level of teacher involvement as indicated by superintendents and business officers (1= Not at all, 5 = Extensively).



Principals were reported to be involved to a greater extent in small districts ($M = 3.85$) than in large districts ($M = 3.64$). Further, superintendents indicated a moderate-to-extensive involvement by principals in small districts ($M = 4.22$) while their counterparts in large districts ($M = 3.60$) indicated a significantly lower, more moderate level of involvement.

Across all participant groups, small districts ($M = 3.53$) indicated a lower level of involvement of Chief Purchasing Officers than large districts ($M = 3.91$). Significant differences were not observed between participants.

Across all participant groups, superintendents in small districts ($M = 4.08$) were reported to have a moderate-extensive level of involvement (see Table 5), whereas in larger districts ($M = 3.58$), their involvement was perceived as more moderate. Business officers, specifically, indicated a significantly higher level of superintendent involvement within smaller districts ($M = 4.26$) than in larger districts ($M = 3.14$).

FINDINGS

Table 5
Descriptive Statistics and Frequencies of Responses Assessing Superintendents' Degree of Involvement

STAKEHOLDER	Not at All		Moderately		Extensively	M	SD
	%	%	%	%	%		
Small District							
Superintendent	0.0	4.3	17.4	30.4	47.8	4.22	0.90
Principal	0.0	7.8	25.5	35.3	31.4	3.90	0.94
Technology Director	0.0	10.7	28.6	21.4	39.3	3.89	1.07
Curriculum Director	0.0	0.0	18.2	18.2	63.6	4.45	0.80
Business Officer	0.0	0.0	21.1	31.6	47.4	4.26 ^b	0.81
Total Small District	0.0	5.6	23.1	28.7	42.7	4.08 ^a	0.94
Large District							
Superintendent	0.0	15.0	40.0	25.0	20.0	3.50	1.00
Principal	2.0	14.0	14.0	32.0	38.0	3.90	1.13
Technology Director	3.2	25.8	22.6	22.6	25.8	3.42	1.23
Curriculum Director	0.0	14.3	42.9	14.3	28.6	3.57	1.08
Business Officer	13.6	18.2	27.3	22.7	18.2	3.14	1.32
Total Large District	3.5	17.4	25.7	25.0	28.5	3.58	1.17

^a Small districts scored higher than large districts, $p < .01$.

^b Business officers in small districts scored higher than those in large districts, $p = .01$.

Communication. Across all participant groups, small districts ($M = 3.62$) were more satisfied with communications within their district, though still neutral, as compared to large districts ($M = 3.37$). Differences were not observed on this particular survey item between groups.

Acquisition. Smaller districts ($M = 3.30$) reported relying significantly less on formal, competitive decision-making processes such as RFPs than larger districts ($M = 3.80$). Technology directors in small districts ($M = 2.75$) indicated significantly less reliance on formal processes than those in large districts ($M = 3.84$).

Implications. In general, and not surprisingly, the procurement process was perceived as smoother and more inclusive by participants in smaller districts than by those in larger districts. For the small districts, there appears to be greater opportunity for different stakeholders to communicate about needs and for end-users, such as teachers and principals, to influence discovery and acquisition. As district size increases, reliance on the business office and more formal acquisition processes tends to increase. Stakeholders in smaller districts, probably due in part to their stronger roles and the quicker turnaround in purchasing desired products, are more likely to perceive the procurement process as meeting contemporary needs.

FINDINGS

Given these considerations, the findings overall do not reveal substantive differences that imply fundamentally different needs for districts of different sizes. Both the large and the small appear to struggle with similar challenges along the procurement pipeline—having adequate funds for ed-tech procurement (*Action Point I*), conducting systematic instructional needs assessments (*Action Point II*), discovering what ed-tech solutions are available (*Action Point III*), evaluating the quality of products beyond peer recommendations (*Action Point IV*), and, to a lesser extent (because the data do not suggest strong dissatisfactions), acquiring selected products in a timely manner. Larger districts seem to struggle more, given the more extensive bureaucratic structures and numbers of stakeholders (teachers, principals, administrators), with achieving an inclusive, collaborative process that gives end-users a substantive voice (particularly in needs assessments, and discovery) but have potential advantages in capacity to conduct pilots and more intensive vetting of providers and products.

Relationship Between Company Size and Provider Responses

Research questions 1d for this study asked, “What does the ed-tech procurement process look like for provider participants within smaller firms as compared to larger firms?”

For our analysis we derived the size of the provider—either small ($n = 26$) or large ($n = 21$)—based on the annual sales volume of the provider. We used the median annual sales volume (\$5 million) to split the 47 providers into two groups. Note that providers were not asked every question on the survey but they were asked some questions that other stakeholders were not. Descriptive statistics and frequencies of responses for all closed-ended survey items may be found in Appendix H.

In contrast to the higher level of satisfaction of smaller districts as compared with larger districts, participants from larger firms reported a higher level of satisfaction to aspects of the procurement process on 12 out of 14 items. The following sections highlight noteworthy findings, including the three survey item comparisons that did yield a significant difference between these groups.

General perceptions of the process.

- ▶ With regard to whether district procurement processes meet contemporary needs, participants from small firms ($M = 1.72$) more strongly disagreed than large firms ($M = 2.14$) in their responses.
- ▶ Both small ($M = 2.19$) and large ($M = 2.29$) firm participants indicated similar dissatisfaction with the time involved for procurement. Participants from smaller firms ($M = 4.15$; 69% agreement) were significantly more likely to agree that an improvement in efficiency would decrease costs as compared with those in larger firms ($M = 3.24$; 48%), who were more neutral.

Stakeholder involvement.

- ▶ Providers generally agreed on the level of involvement of various stakeholders within the procurement process. Small providers, however, perceived a moderate-extensive level ($M = 4.00$) of principal involvement, which was significantly higher than the moderate level of involvement ($M = 3.30$) perceived by larger providers.
- ▶ Small providers ($M = 4.19$) believed that districts relied more extensively on end-user recommendations than did large providers ($M = 3.62$). Further, while not significantly different, large provider participants ($M = 3.10$) were neutral in their satisfaction with the involvement of end-users, whereas small provider participants ($M = 2.85$) were unsatisfied.

Implications. Of the 55 comparisons conducted, only three items, as noted above, showed differences between small and large providers. Small providers perceive somewhat more end-user involvement in the procurement process. Both groups are dissatisfied with the time required for purchasing and with whether the procurement process meets contemporary needs. Smaller providers, however, were significantly more negative about the latter. Based on interviews and discussions with TAG members, our impression is that

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small providers are generally more apt than large providers to see the marketplace as tough to penetrate and still not sufficiently adapted to accommodating numerous smaller product options as opposed to a limited number of larger ones (like textbooks or hardware). However, the responses overall clearly revealed more similarities than differences in perceptions based on provider size.

Cross-Validation Results

The results described in this section address the research question: Do responses by the secondary sample of superintendents corroborate those of the core sample? Using Mann-Whitney nonparametric tests and two group ANOVA parametric tests, we compared the core sample ($n = 43$) and the secondary sample ($n = 47$). As described in the methodology section, the two samples differed in selection characteristics (i.e., the secondary sample was all self-selected association members), linkages to district counterparts in the four other participant groups (only the core sample), and one demographic (the secondary sample was more likely to be from small or medium-sized districts). However, both samples appeared reasonably representative of superintendents nationally who face procurement needs and decisions regularly. Descriptive statistics and frequencies of responses for all closed-ended survey items for this analysis may be found in Appendix K.

Results showed that reactions to ed-tech procurement between superintendents in the core sample were equivalent to those in the secondary sample, with only three exceptions:

- ▶ Secondary sample superintendents rated principals' level of involvement more highly ($M = 4.30$) than did the core sample ($M = 3.93$) (see Table 6).
- ▶ The secondary sample ($M = 4.04$) rated the involvement by Chief Financial Officers significantly higher than did the core sample ($M = 3.52$) (see Table 7).
- ▶ Superintendents in the core sample indicated significantly less ($M = 2.85$) reliance on products with the lowest cost than secondary sample superintendents (see Table 8).

Table 6
Descriptive Statistics and Frequencies of Responses Assessing Principal's Level of Involvement

SUPERINTENDENT STAKEHOLDER	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	2.1	10.6	42.6	44.7	4.30 ^a	0.75
Core	0.0	2.3	25.6	48.8	23.3	3.93	0.77

^a Secondary sample scored higher than the core sample, $p = .02$.

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Table 7
Descriptive Statistics and Frequencies of Responses Assessing the Involvement of the Chief Financial Officer

SUPERINTENDENT STAKEHOLDER	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	4.3	6.4	14.9	29.8	44.7	4.04 ^a	1.12
Core	4.8	14.3	28.6	28.6	23.8	3.52	1.15

^a Secondary sample scored higher than the core sample, $p = .02$.

Table 8
Descriptive Statistics and Frequencies of Responses Assessing Degree of Reliance Products with the Lowest Cost

SUPERINTENDENT STAKEHOLDER	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	8.5	23.4	44.7	21.3	2.1	2.85	0.93
Core	0.0	16.7	45.2	31.0	7.1	3.29 ^a	0.84

^a Core sample scored higher than the secondary sample, $p = .04$.

Implications. Results for the secondary sample were highly consistent with those for the core sample. Across all comparisons, only three were significant, with none reflecting conflicting views of high magnitude or importance. Cross-validation of the core sample findings, therefore, appears strong, and raises confidence that the latter results accurately reflect a broader population of superintendents' reactions and experiences.

CONCLUSION

Here, we integrate results from the multiple stakeholder surveys and interviews to discuss the main findings. As an organizational scheme, we pose four questions that appear central to school districts' needs and activities in procuring ed-tech products. Consistent with the *Action Point* framework used throughout this report, the questions address, respectively, a focus on needs assessment, discovery, evaluation, and acquisition.

1. What ed-tech product do we need?
2. What ed-tech products are available for our needs?
3. Which available products are the best fit?
4. Can we acquire the products that we select in a timely manner?

What do we need?

Results indicate fairly consistent reliance by school districts on conducting some type of needs assessment, and moderate satisfaction that the identified needs are ultimately satisfied. Needs, however, were described in interviews in a global rather than specific manner: raising test scores in a particular subject or facilitating data management, enabling authoring of lessons, and so forth. The specific types of ed-tech support required, such as “A tutorial program in math that involves parents in checking students’ work,” or “A data management system that includes rubrics for assessing project work” were rarely mentioned, although we suspect that some districts do conduct more granular analyses.

Conclusions:

- ▶ Some type of needs assessment is frequently conducted at the outset of procurement, but in many cases there is uncertainty about the specific ways that ed-tech products would be used, and what attributes they should have, to address instructional needs.
- ▶ End-users are less involved in the process than providers and district participants (particularly principals) view as desirable.

Recommendations:

- ▶ Districts would likely benefit from the creation of guidelines and models for structuring instructional needs assessments to ensure that selections and acquisitions are linked directly to priority areas.
- ▶ Districts would likely benefit from guidelines for matching instructional design features of ed-tech products to needs assessments with regard to learning goals, instructional theory, learner analysis, user interface and support, alignment with curriculum, and so on. Districts should more integrally involve end-users in defining needs more specifically and operationally (e.g., “To teach problem-based learning more effectively in STEM classes...”).
- ▶ In communicating with district stakeholders, providers should increase awareness of current and future instructional needs so that they can adapt product design and market accordingly.

What is Available?

The rapidly growing number of products available and lack of a reliable resource to aid in product discovery was a concern expressed by both district and provider participants. Without a central source to identify products, the evaluation of products proves to be a challenge for districts of all sizes. District participants desire product information independent of that offered by providers, and currently lack an efficient means to compare products and make informed decisions based on objective information. Some districts are aware of various networks or websites that list products, but don't presently see them as necessarily representing full ranges of products, the best products, or assurance that the products are supported by evidence or peer review.

CONCLUSION

Conclusions:

- ▶ There are likely to be multiple ed-tech products that can potentially support particular instructional needs, but district participants lack an efficient, practical means to learn about what the options are.
- ▶ Because instructional needs are often only generally defined (“Raise fourth-grade math scores”), even within a particular curriculum area, there is a plethora of product genres (e.g., full curricula, tutorials, games, presentational, whole-class vs. personalized, etc.), which complicates discovery even further.

Recommendations:

- ▶ District should increase use of Requests for Information (RFIs) to alert providers as to product needs and to produce information about potentially relevant ed-tech solutions.
- ▶ Providers should offer incentives to districts to conduct pilot studies of their products.
- ▶ Districts should increase use of available information and networking websites, which identify ed-tech products and where they are being implemented for instruction.
- ▶ Districts and providers would likely benefit from an online ed-tech products “Ed-tech Product Information Exchange” that would (a) list and describe available ed-tech products, (b) report formal research studies on products and their results, (c) report pilot studies on products and their results, (d) report consumer reactions to ed-tech products, and (e) facilitate networking and communications between providers, districts, and evaluators. Importantly, this website would serve as a “one-stop-shop” that combines product information, pricing guidance, and so forth with evaluation findings and customer satisfaction reports.

Which Available Products Are the Best Fit?

For evaluating available ed-tech products, the present results showed fairly high reliance by school districts on external peers’ and internal end-users’ perceptions about the quality of particular ed-tech products. The latter group’s recommendations, in turn, appear to be largely based on direct interactions with the products via “informal” piloting activities. District participants, especially superintendents and principals, also conveyed on the survey and in interviews that rigorous evidence of product effectiveness (where available) was another important source of information for product selections.

Conclusions:

- ▶ Some type of evaluation strategy is almost always used by districts in the selection of products.
- ▶ Evaluating potential selections, however, is complicated by several factors: (a) lack of available, credible evidence on product effectiveness, (b) uncertainty about the criteria on which to evaluate products (Student achievement gains? Usability? Professional development support?), and (c) the capacity of districts to conduct their own evaluations (i.e., pilots can be time-consuming and costly).
- ▶ A valuable source of evaluation evidence for districts is peer recommendations, because trusted stakeholders from demographically similar districts can provide candid firsthand impressions of their experiences and satisfaction with a particular ed-tech product. Peers can answer questions about impacts on teachers and students, and discuss the quality and level of the provider’s support in offering training and technical assistance where needed.
- ▶ A second valuable source of evaluation evidence is conducting structured pilots that collect satisfaction and implementation data from teachers and students, and often preliminary student achievement outcomes. Pilots provide a district with a firsthand “test drive” of selected products, so that their potential for wider adoption can be judged.

CONCLUSION

- ▶ A third valuable, but seemingly more limited source of evaluation evidence consists of results from rigorous studies. Having rigorous evidence is certainly an advantage for differentiating an ed-tech product from its competitors, but such studies tend to be costly for providers to commission, and, once performed, may lack relevance to contextual conditions at many school districts or to current educational policies (e.g., Common Core State Standards). Products that facilitate teachers' work in planning and delivery instruction, such as managing and interpreting data, evaluating portfolios, and authoring lessons, are not likely to demonstrate measureable effects on student achievement (at least nearly as quickly and strongly as instructional programs can). Similarly, instructional products used as supplements to regular curricular for relatively small segments of learning time per week may be helpful to students and teachers but produce only small effects on test scores.

Recommendations:

- ▶ Districts and providers would be likely to benefit substantially from having guidelines for conducting formal pilots to facilitate discovery and evaluation. The present findings indicate that pilots are highly regarded by all stakeholder groups, but effective strategies are needed for (a) matching products to be piloted to teachers based on interest and instructional needs; (b) funding the pilots; (c) collecting both qualitative and quantitative data on implementation, satisfaction, and educational outcomes; and (d) analyzing, interpreting, and using the data for product evaluation and development. Separate but inter-related guidelines for providers and districts would be invaluable.
- ▶ Districts would be likely to benefit from a national ed-tech product website ("Information Exchange"), as previously proposed for facilitating discovery, to make findings from pilots, rigorous studies, and peer experiences much more accessible.
- ▶ Providers would be likely to benefit from guidelines for how to acquire credible evidence for their products (e.g., engaging third-party evaluators for design reviews, case studies, experimental comparison group studies, etc.).
- ▶ Providers should seek opportunities to collect third-party (independent) evidence from evaluation studies (both treatment-control group comparisons and case studies) to differentiate and support their products.
- ▶ Districts would be likely to benefit from guidelines for accessing and evaluating evidence of effectiveness. Our findings indicate frustrations and confusion regarding what constitutes meaningful evidence and how to interpret and weigh evidence from different sources such as rigorous studies, pilots, peer recommendations, and provider studies or data.

Can We Acquire the Products that We Want in a Timely Manner?

District interviewees conveyed as a general perspective that the procurement of ed-tech involves an increased number of options in the marketplace, less defined criteria for evaluation, and the involvement of more stakeholders than when procuring hardware or textbooks. These components tend to increase the complexity of the process and the timelines involved. A formal, competitive (RFP) process appears to be employed slightly more often than an informal process, and district participants were moderately satisfied with both forms. Smaller districts, though, indicated less reliance on a formal process as compared to larger districts. Formal processes are triggered by larger dollar purchases (the cut-offs for which greatly vary across districts), but are preferred by some district stakeholders (especially business officers) as ways of more carefully vetting products and comparing costs and services.

CONCLUSION

While varied views were presented by different district respondents within and across groups, there was general moderate acceptance (and certainly not strong concerns about) the timeliness and nature of purchasing processes. In general, most district participants believe that they can usually obtain desired products in reasonable time once the necessary prerequisite steps (e.g., for needs assessment, discovery, evaluation) are taken. Little interference was seen from states, municipalities, or school boards. Providers, on the other hand, viewed the purchasing process as requiring a protracted timeline, and if requiring a formal RFP process, entailing too much effort and cost for an uncertain result.

Conclusions:

- ▶ Purchasing requirements do not, in general, extend product acquisition time for districts.
- ▶ RFPs and other competitive processes have value in many cases for districts to more thoroughly vet products and obtain competitive pricing.
- ▶ Cooperative purchasing with other districts is an appealing concept in theory, but in reality, many districts see themselves as having specialized needs, valuing independence, and not wanting to spend extra time working out arrangements with other districts.
- ▶ Decentralized purchasing is appealing for school-based adaptations, but is viewed by superintendents and other central office administrators as generally undesirable (e.g., loss of quality control, fragmenting instructional practices, complicating purchasing district-wide).
- ▶ Governance from state, municipal, or school board policies have potential to interfere with or delay purchasing (and sometimes do), but in general do not appear to have a significant negative impact on ed-tech product acquisition.

Recommendations:

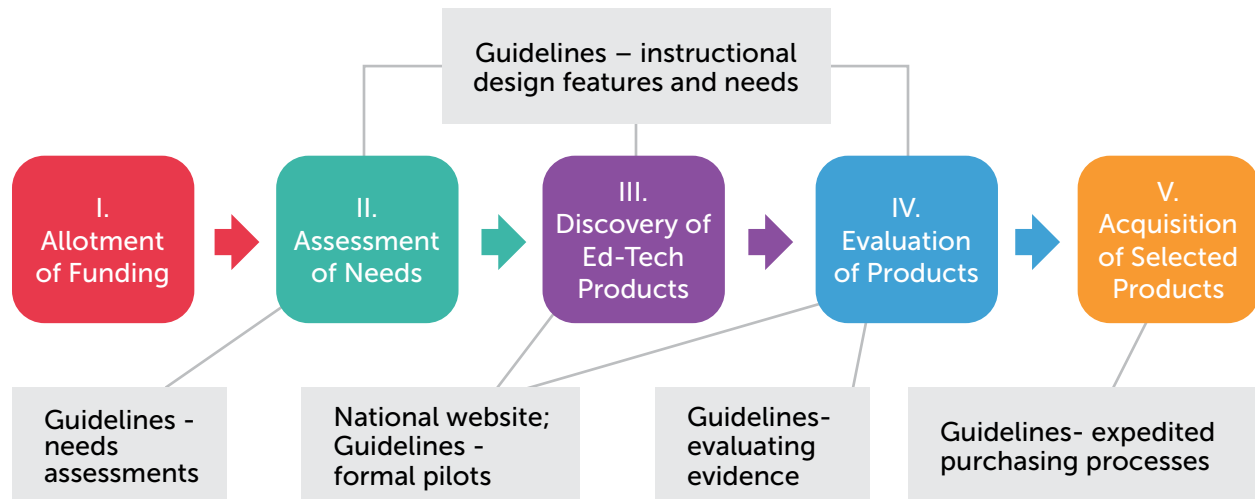
- ▶ Providers and districts would likely benefit from district guidelines and other policies that clarify acquisition processes: i.e., the use of RFIs, contracting requirements, RFP policies, and expected timeframes for different types of purchases.
- ▶ Providers and districts would likely benefit from policies and specific acquisition strategies that move more directly from successful pilots to timely and broader-based purchasing without the need for new RFPs.
- ▶ Providers and districts would likely benefit from expedited or simplified RFP processes and forms tailored to ed-tech instructional products. Creating templates or checklists of model RFPs, RFIs, and contract terms used by districts will be helpful to buyers and sellers.
- ▶ Providers and districts would likely benefit from educating school boards and states about the unique conditions and needs for acquiring ed-tech software vs. hardware products.

Recommended Tools and Supports for Improving Practice

Throughout this report, we have discussed what respondents from six different stakeholder groups have suggested about improving procurement, while offering our own interpretations in relation to the five *Action Points* and the five evaluation questions. Clearly, there are numerous strategies that experts and successful practitioners could recommend at a granular level, such as how to select providers for pilot participation, how to evaluate evidence presented in professional journals, how to budget more efficiently for ed-tech procurement, and so forth. For this report, we will limit the recommendations to a few major areas that emerged in our synthesis as having the most potential to bring about meaningful positive changes. As a visual aid we again present the Operational Framework (originally Figure 1), this time with the recommended changes represented with directional arrows to the *Action Points* they most directly impact (see Figure 19).

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Figure 19. Ed-tech procurement Operational Framework with recommended changes.



- ▶ *A national website* is recommended to (a) list and describe available ed-tech products, (b) report formal research studies on products and their results, (c) report pilot studies on products and their results, (d) report consumer reactions to ed-tech products, and (e) facilitate networking and communications between providers, districts, and evaluators. Such a website could greatly strengthen what emerged as the most challenging Action Point for providers and districts—*Discovery of Ed-Tech Products*, while also directly facilitating the Action Point of *Evaluating Ed-Tech Products*.
- ▶ *Guidelines and models for structuring instructional needs assessments (Action Point II)* is recommended to ensure that selections and acquisitions are linked directly to priority areas. Our interview data suggested that needs assessments were often informal, subjective, and lacking sufficient end-user input. As a consequence, the subsequent procurement activities will lose fidelity to addressing the true instructional needs by schools.
- ▶ *Guidelines for matching instructional design features of ed-tech products to needs assessments (Action Points II, III, and IV)* with regard to learning goals, instructional theory, learner analysis, user interface and support, alignment with curriculum, and so forth. Our overall data, along with “member checking” (feedback) from presentations of preliminary findings, suggest that products are often examined and vetted based on surface features rather than systematically based on sound design principles and fit with instructional needs.
- ▶ *Guidelines for conducting formal pilots to facilitate discovery (Action Point III) and evaluation (Action Point IV)*. The present findings indicate that pilots are highly regarded by all stakeholder groups, but effective strategies are needed for (a) selecting products to pilot and matching them to teachers and instructional needs; (b) funding the pilots; (c) collecting both qualitative and quantitative data on implementation, satisfaction, and educational outcomes; and (d) analyzing, interpreting and using the data for product evaluation and development.
- ▶ *Guidelines and examples of expedited RFPs and related processes*. The findings indicate that RFPs are generally viewed by district stakeholders as necessary or helpful for vetting providers, especially for larger purchases, but can be burdensome to providers if overly long and complex.
- ▶ *Guidelines for accessing and evaluating evidence of effectiveness*. Our findings indicate frustration and confusion regarding what constitutes meaningful evidence and how to interpret and weigh evidence from different sources such as rigorous studies, pilots, peer recommendations, and provider studies or data.

CONCLUSION

What Have We Learned? Nine Notable Takeaways

Although the results reported in the present study—coming from six surveys and over 50 interviews—intend to provide a comprehensive examination of ed-tech procurement practices, a risk for readers is getting lost in the details and losing perspectives of what is most important and impactful. What constitutes “importance” and “impact” is, of course, somewhat in the eye of the beholder. Accordingly, we offer with that caveat in mind, what we as the researchers and authors believe emerged from the study as the most *significant* (impactful, interesting, provocative, supported) takeaways. We present them below in no particular order.

- 1 Discovering what is out there.** The most significant challenge of procuring ed-tech products, as compared to traditional instructional products like textbooks, occurs in the discovery phase. The market is flooded with products across all content areas and many application types. Presently, providers struggle to gain visibility for their products, and school districts struggle to learn what is out there.
- 2 Involving the end-user.** End-users (the practitioners in our classrooms) are often only marginally involved in the identification of instructional needs and selection of products. Unlike textbooks, which universally engage teachers in the same manner (making assignments, explaining content, guiding lesson planning), ed-tech products require much higher and more varied teacher interactivity. Learning how to use an ed-tech product can take substantial time for teachers. Implementing the product in the classroom changes the nature of teaching and other instructional activities. Seemingly, those who are so directly affected by the product should have a more central role in selecting and “test-driving” it before it is purchased.
- 3 Knowing what you need.** Assessments of instructional needs are most frequently surface in nature and, thus, do not identify the specific types of support and product attributes that best support instructional goals. Needs assessments need to be more structured and precise.
- 4 Pilots as a means of discovery and evaluation.** Pilots appear to have strong potential for districts and providers to collaborate in field-testing products for broader district adoption. Pilots that are structured and rigorous generate evidence about product efficacy that is useful not only locally but also to other districts considering the same products.
- 5 National ed-tech product information exchange.** A potentially valuable tool to districts and providers would be a national website (“Ed-tech Product Information Exchange”), which extends existing networks and online information sites by providing comprehensive descriptions of products in different areas, evaluation evidence from pilots and rigorous studies, and consumer satisfaction reports. Such a website would greatly facilitate discovery and evaluation—the two *Action Point* domains where districts and providers struggle most.
- 6 Similar district viewpoints.** For the most part, district participants assuming five different roles (superintendent, curriculum director, business officer, technology director, principals) perceive the procurement process and its strengths, weaknesses, and needs in the same way. Although there is less intra-district communications than desired, there are not major disagreements between stakeholders or major dissatisfactions. Improvements in virtually all areas, however, are desired to increase efficiency and success in obtaining and then using the right products. For newer providers, all of these concerns intensify.
- 7 Challenges for providers in a buyers’ market.** Providers, overall, are unhappy with many aspects of the procurement processes: the time delays, RFPs, communications with district stakeholders, getting products discovered. The root cause, it seems, is that there are so many products competing in a pronounced buyers’ market, and uncertain pathways for identifying districts’ needs and becoming noticed and differentiated from the competitors. Completing lengthy RFP applications and waiting for decisions further add to the cost and frustrations.

CONCLUSION

- 8 Only small advantages for small districts.** Smaller districts can maneuver more easily through various procurement stages than larger districts due to having less complex bureaucracies and more immediate contact with administrators and end-users. However, for the most part, small and large districts appear to experience procurement very similarly with regard to processes, challenges, and needs.
- 9 Finding meaningful evidence.** Reliance on evidence of product effectiveness in making product selections is highly valued by nearly all district stakeholders. But there are misunderstandings about what constitutes reasonable evidence in the first place and frustrations in finding credible evidence. Few providers (except for the very large companies) can afford, or win large grants to fund a “randomized control trial” (RCT) to “prove” product effects on student learning. Products that are used in limited dosages or time periods, such as supplementary instruction, or to facilitate teacher grading, data management, or lesson planning may not demonstrate measurable gains in any study, but still have considerable value to students, teachers, administrators, and parents. Therefore, as a practical alternative to complex and expensive RCTs and other highly controlled research studies, credible (third-party) evidence for judging project fit and potential efficacy can come from pilots, case studies, and small comparison-group designs. Yet, few providers, it seems, seek opportunities for their products to be evaluated in the latter types of studies.

Suggestions for Further Research

While this present study offers a breadth of information on ed-tech procurement gleaned from districts and provider participants, additional research is necessary to further explore this topic and provide recommendations to improve efficiency. We offer the following suggestions for additional research.

- ▶ A quantitative analysis of cost triggers and state policies for smaller and larger districts, resulting in competitive vs. non-competitive contracting.
- ▶ A study of how teachers and principals participate in the procurement process and the implications of greater or lesser involvement on satisfaction with and usage of acquired products.
- ▶ A study of how pilots are conducted by diverse districts, and the degree to which piloted products gain advantages for expedited purchasing and scale-up.
- ▶ A study of how providers determine district needs and the degree to which and how they design products accordingly.

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APPENDIX A: CORE SAMPLE DISTRICT CHARACTERISTICS

The core sample consisted of 54 K-12 school districts. The following figures present 2010-2011 district characteristics from the core sample of those participating.

Figure 1. Distribution of student enrollment for the sample of K-12 school districts.

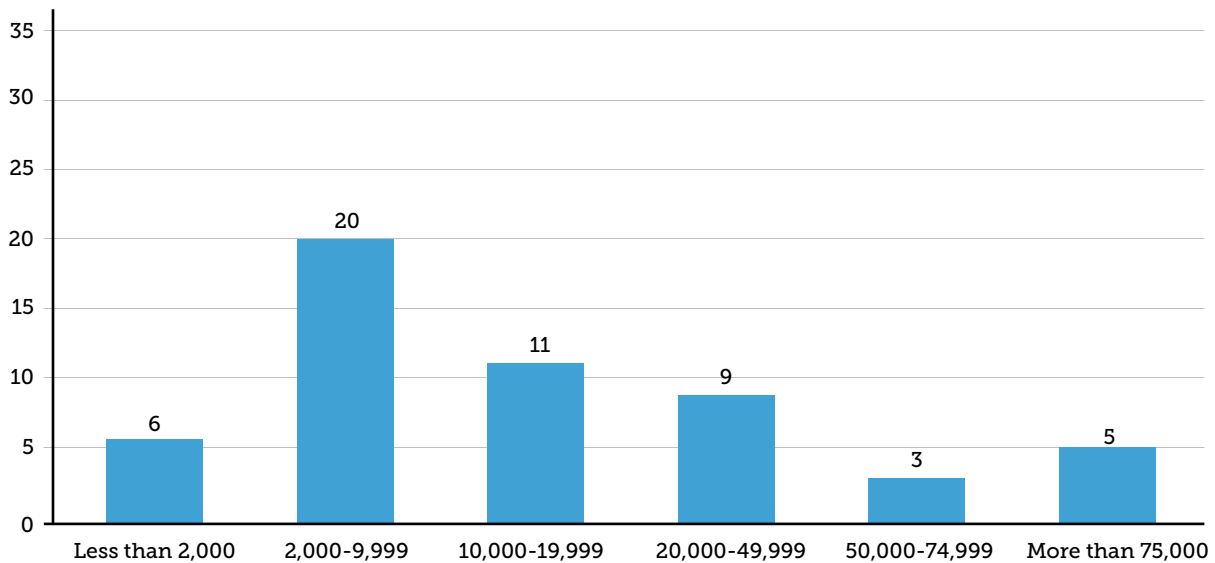
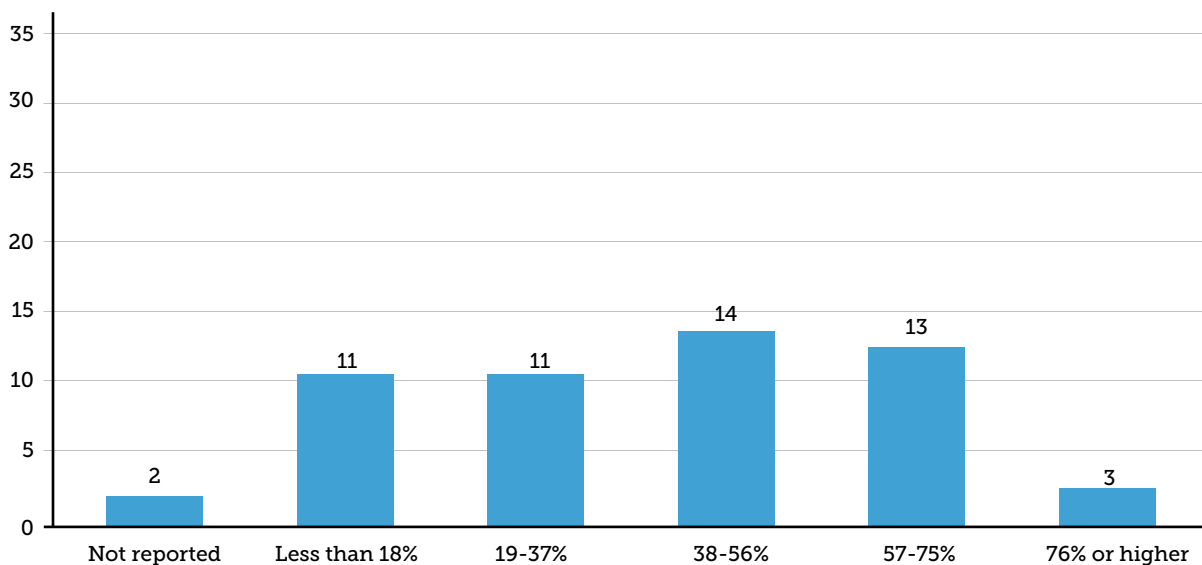


Figure 2. Distribution of percentage of students eligible for free and reduced price lunch.



APPENDIX A: CORE SAMPLE DISTRICT CHARACTERISTICS

Figure 3. Distribution of percentage of limited English proficient/English language learners.

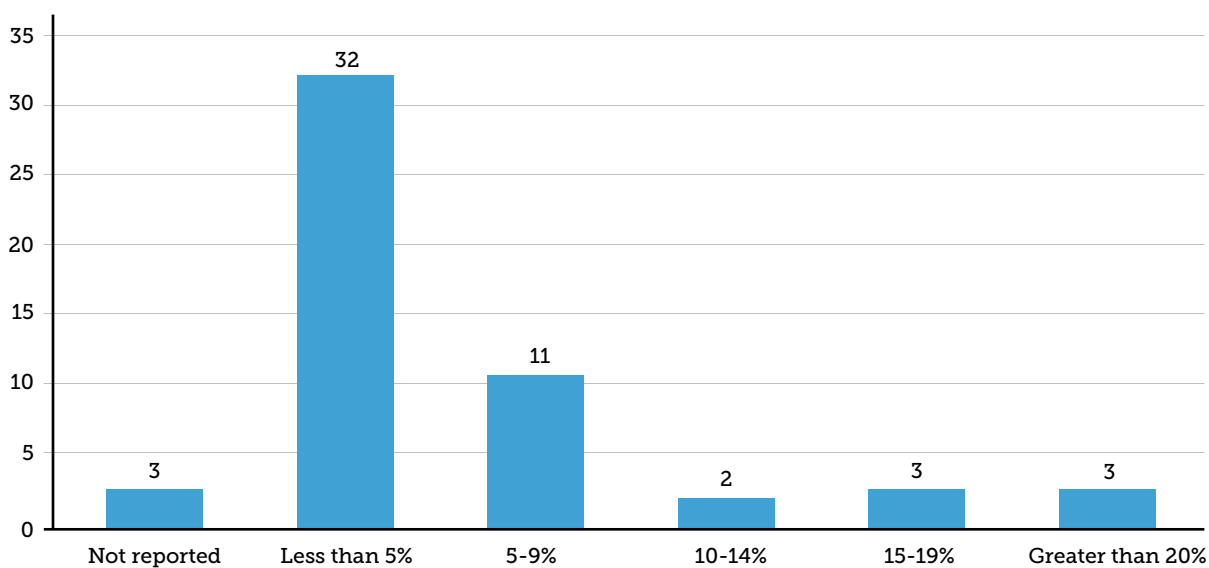
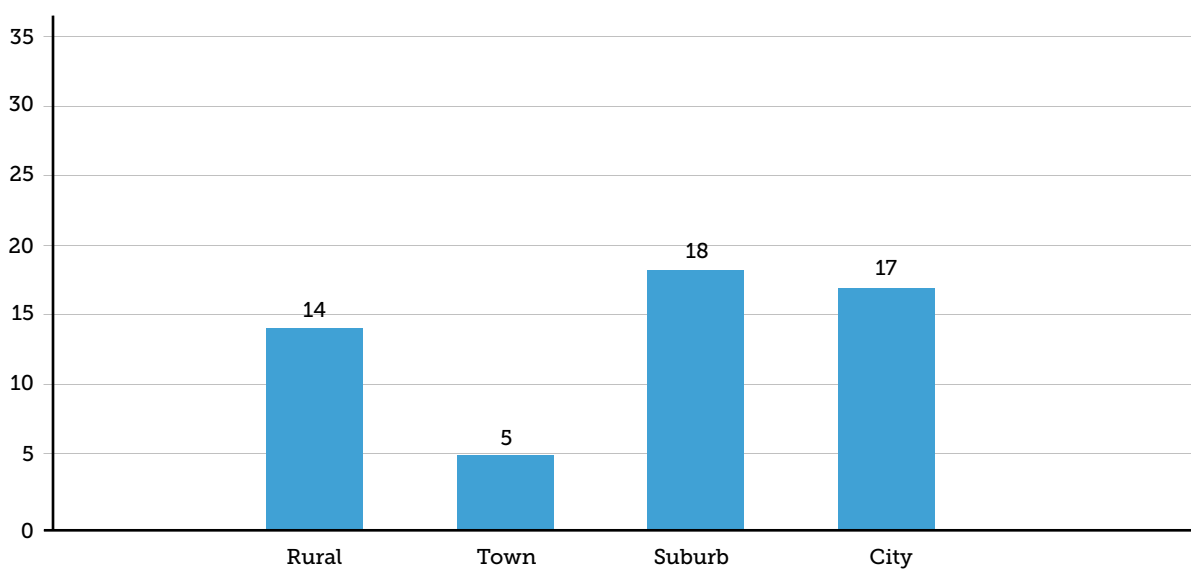


Figure 4. Distribution of district locale.



APPENDIX B: PROVIDER PARTICIPANT CHARACTERISTICS

A total of 47 ed-tech providers completed surveys for the research study. The following figures present characteristics of the participants.

Figure 1. Distribution of annual revenue for the sample of providers.

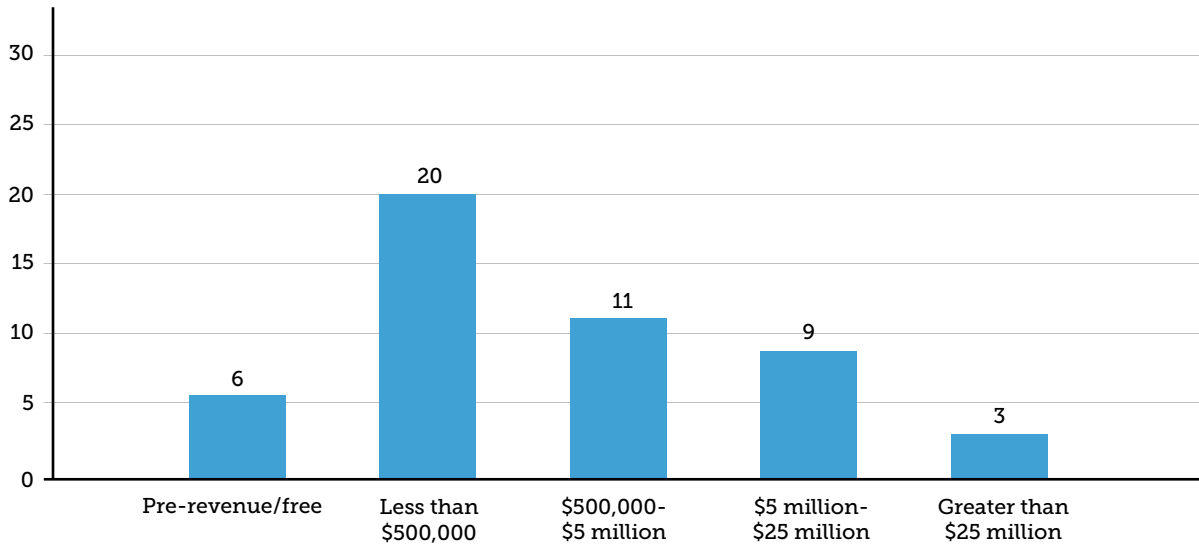
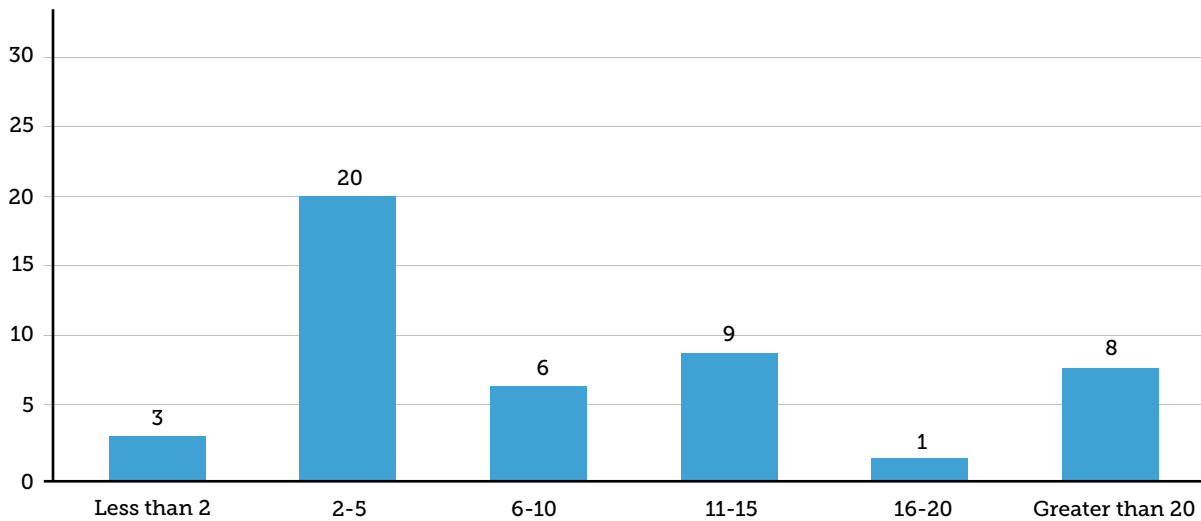
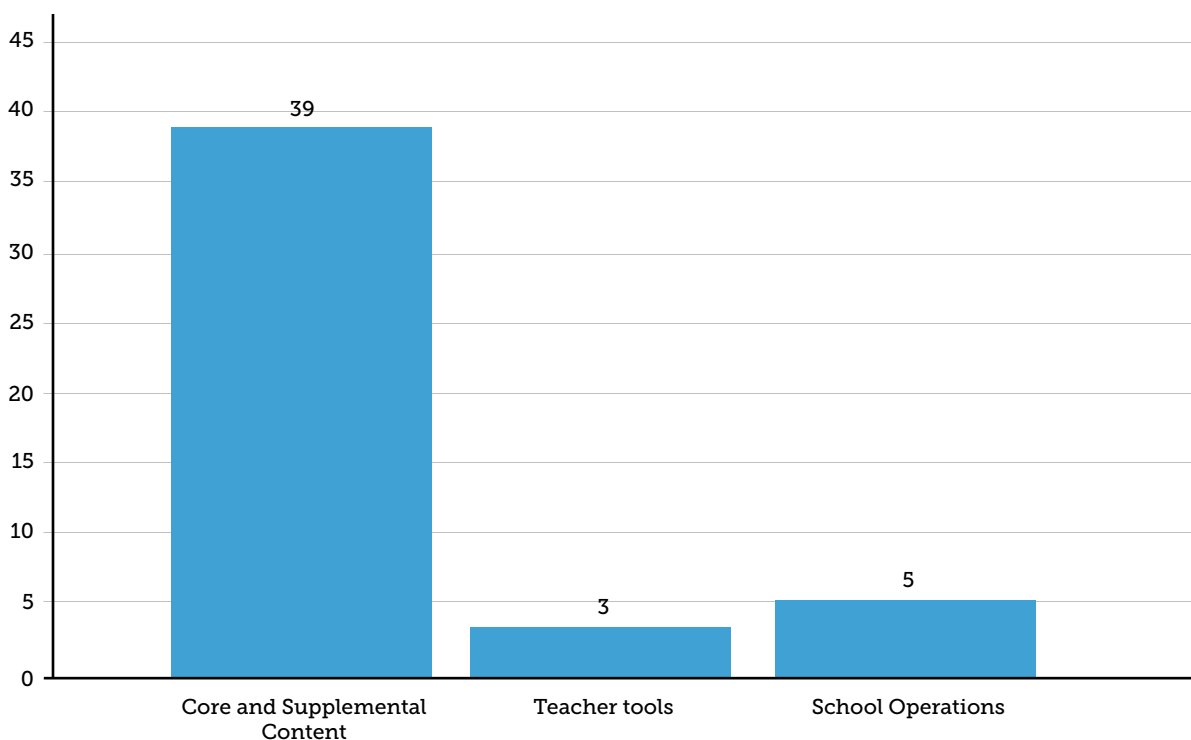


Figure 2. Distribution of provider years in operation.



APPENDIX B: PROVIDER PARTICIPANT CHARACTERISTICS

Figure 3. Distribution of provider product type.



APPENDIX C: SECONDARY SAMPLE DISTRICT CHARACTERISTICS

The secondary sample consisted of superintendents from 47 school districts. The following figures present characteristics of the secondary sample.

Figure 1. Distribution of student enrollment for the sample of K-12 school districts.

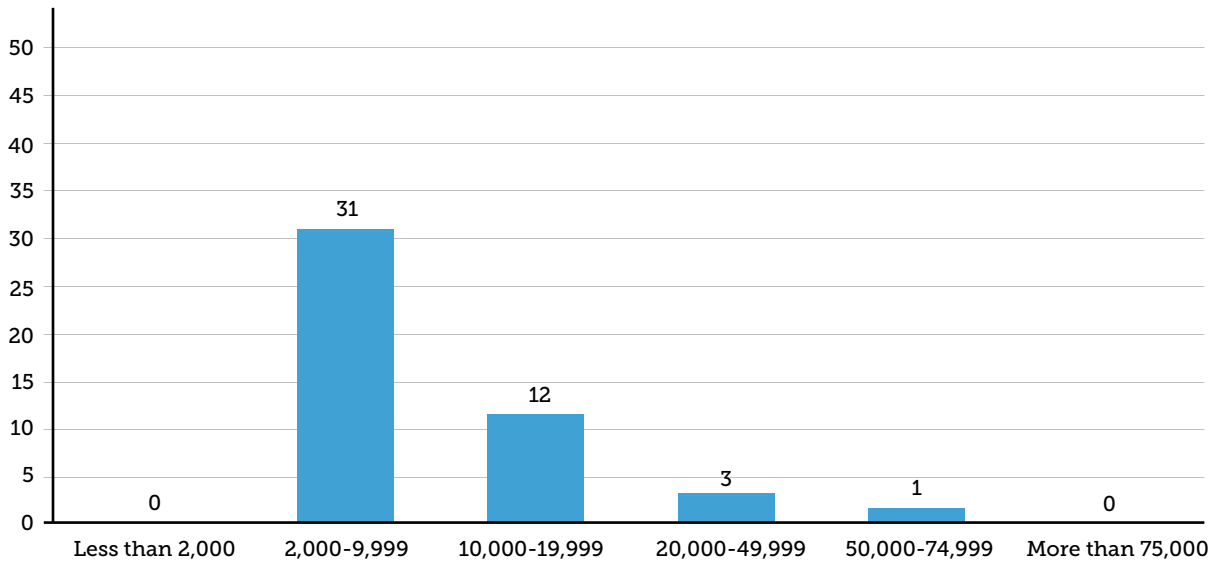
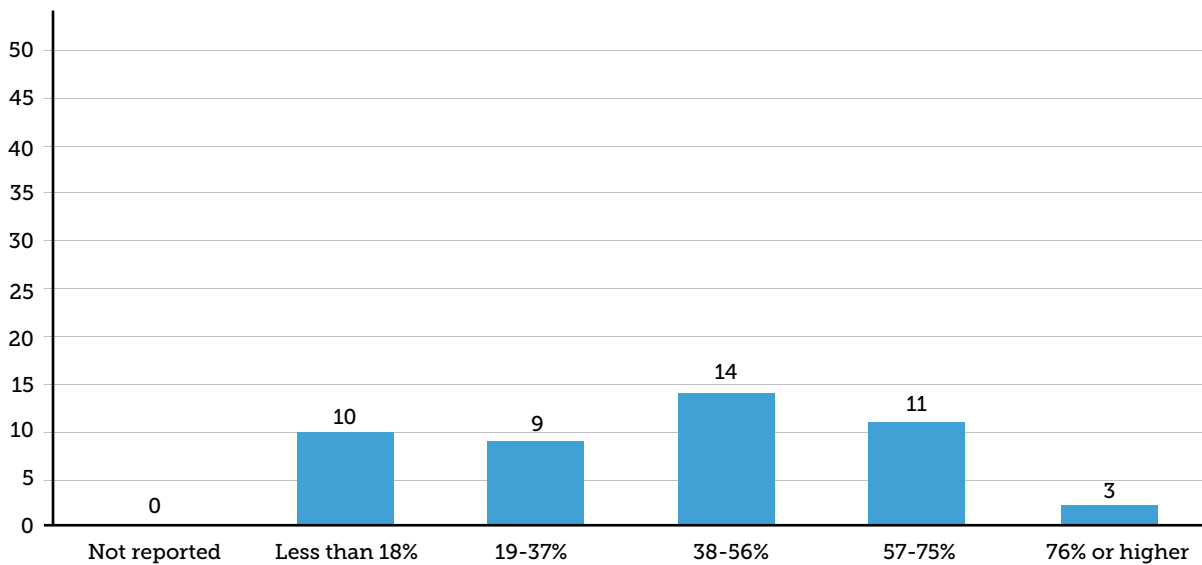


Figure 2. Distribution of percentage of students eligible for free and reduced price lunch.



APPENDIX C: SECONDARY SAMPLE DISTRICT CHARACTERISTICS

Figure 3. Distribution of percentage of limited English proficient/English language learners.

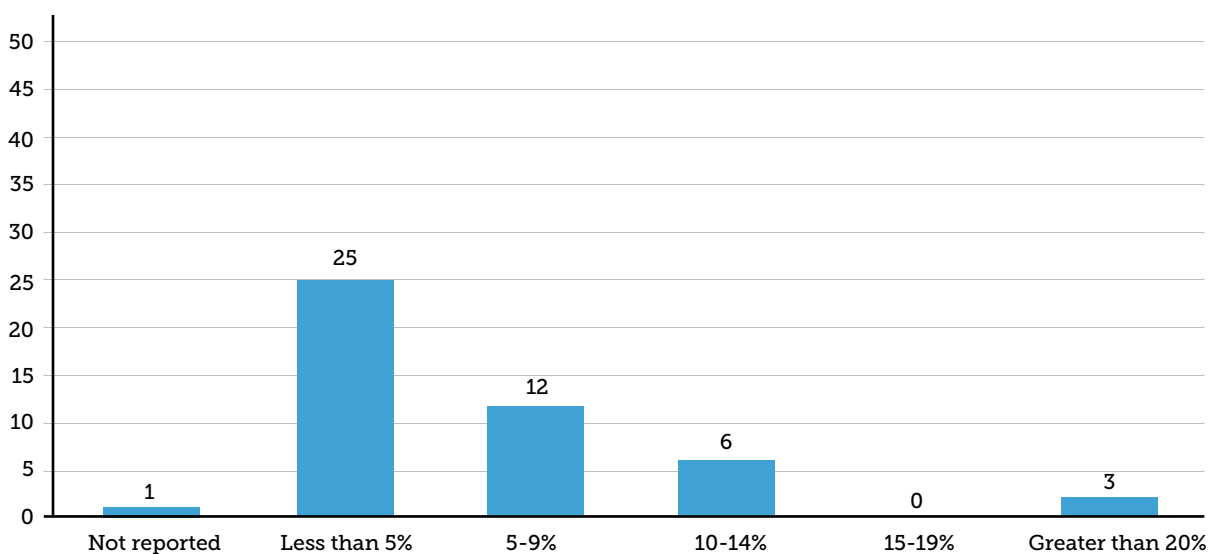
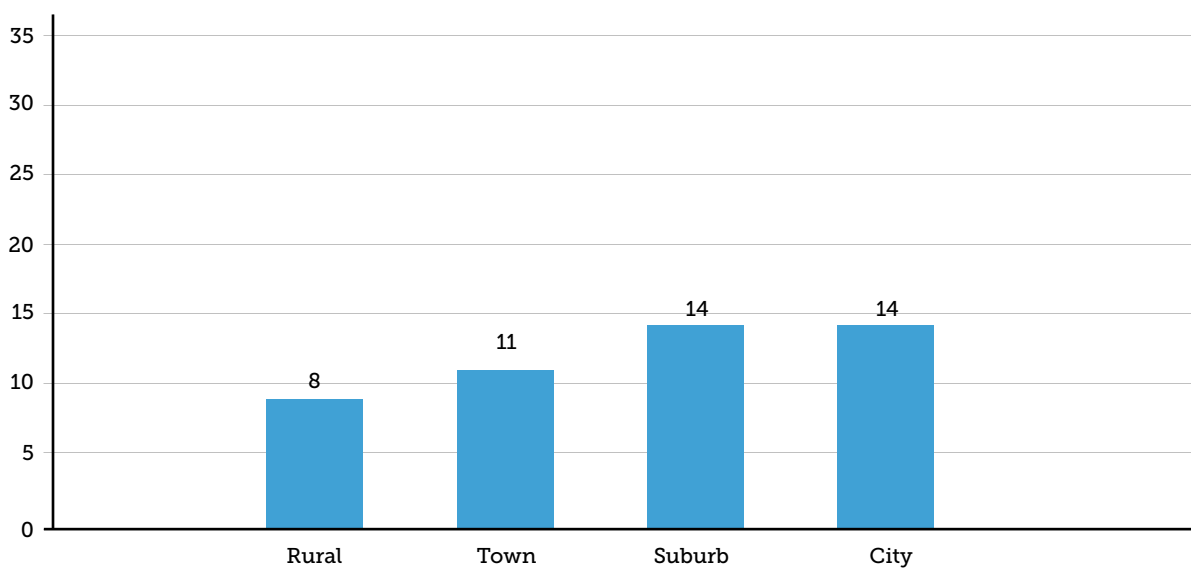


Figure 4. Distribution of district locale.



APPENDIX D: SURVEY ITEMS

SURVEY ITEM	RESPONDENT(S)
Indicate your degree of satisfaction with each of the following aspects of procuring ed-tech products.	
The district's processes for identifying, evaluating, and acquiring needed ed-tech products	All participants
The district's competitive procurement processes (RFP or other) for obtaining/processing applications from vendors	Superintendents, Technology Directors, Curriculum Directors, Business Officers
The district's non-competitive procurement processes (sole source or other) for obtaining/processing applications from vendors	Superintendents, Business Officers
Communications between district stakeholders (curriculum director, principals, teachers, ed-tech director, procurement officer, superintendent) regarding products to address specific instructional needs.	All district participants
The involvement by end-users (e.g., principals and teachers) in the selection and acquisition of products	All participants
Providers' knowledge of state, municipal, and district purchasing policies	Superintendents, Business Officers
The credibility of product effectiveness evidence submitted by providers	All district participants
The time required to complete procurement processes and bring products to end-users	All participants
The success of typical purchasing decisions in obtaining the desired ed-tech products that meet specifically identified instructional needs	All district participants
State or municipal laws that govern procurement processes	Superintendents, Curriculum Directors, Business Officers, Providers
The involvement of the school board in procurement processes	Superintendents, Curriculum Directors, Business Officers, Providers
The processes for identifying, evaluating, and acquiring needed ed-tech products at the classroom level	Principals
The processes for identifying, evaluating, and acquiring needed ed-tech products at the school level	Principals, Curriculum Directors, Technology Directors
Gaining acceptance or visibility in a district	Providers
Information provided by the district regarding buying cycles and purchasing policies	Providers
Districts' openness to contracting with for-profit providers	Providers
Provider access to district decision makers regarding the procurement process	Providers
Opportunities for conducting pilots in district schools	Providers
Opportunities to expand from pilots to a broader implementation (without a complicated procurement process or RFP)	Providers
Your understanding of districts' instructional needs and preferred pedagogies	Providers
Indicate your level of agreement or disagreement with each of the following statements.	
District procurement processes meet contemporary needs for product acquisitions	All participants
De-centralized school procurement processes (significant school autonomy) are desirable for acquiring needed ed-tech products	All participants

APPENDIX D: SURVEY ITEMS

The district would be likely to use standardized RFPs and contract documents that reflect best practices nationally	Superintendents, Curriculum Directors, Business Officers, Technology Directors
Our procurement processes help me buy the products I already know I want even if from less established providers/brands	Superintendents, Curriculum Directors, Technology Directors
If procurement processes were more efficient (e.g., quicker, less demanding on districts and providers), product costs would decrease	Superintendents, Business Officers, Technology Directors, Providers
Data privacy and security needs make procurement processes more difficult for ed-tech products than for other products	Superintendents, Technology Directors
I feel secure in my role to pursue the products that appear most effective even if from less established providers/brands	Principals
Using standardized RFPs and contract documents that reflect best practices nationally would be desirable in improving procurement processes	Providers
The development of our products is directly informed by research evidence and educational outcomes	Providers
The development of our products is influenced directly by expected requirements for selling them to districts (i.e., typical district procurement processes)	Providers
Rate the degree to which each of the following individuals or groups are involved in procurement processes for ed-tech products.	
Parents	All participants
Students	All participants
Teachers	All participants
Principals	All participants
Chief Academic Officer (Curriculum Director or similar)	All participants
Chief Financial Officer	All participants
Chief Information Officer	All participants
Chief Purchasing Officer	All participants
Technology Director	All participants
School Board	All participants
Superintendent	All participants
Other	All participants
To what degree does the district rely on each of the following to identify, select, and acquire quality products?	
A formal, competitive decision-making process (e.g., RFP)	All participants
A noncompetitive procurement process (sole source or other)	All participants
A cooperative purchasing process with other districts	Superintendent, Business Officer, Provider
Rigorous evaluation evidence (from published studies, literature reviews, etc.)	All participants
Non-rigorous evaluation evidence (e.g., from providers' in-house studies)	All participants
Recommendations from sales representatives	All participants
Recommendations from end-users (principals or teachers)	All participants
Recommendations from other districts or consultants	All participants

APPENDIX D: SURVEY ITEMS

Choosing from a list of “approved” (or recognized) providers/brands	All participants
Recommendations or ratings on an informational website (please specify which):	All participants
Pilot tryouts of products within the district	All participants
Products with the lowest cost	Superintendents, Business Officers, Providers
“Bundled” products (both software and hardware together)	Superintendents, Business Officers, Technology Directors, Providers
Other (please specify and rate):	All participants
Your recommendations	Curriculum Director, Technology Director
To what degree might the following tools and guidelines be helpful to your district in identifying, evaluating, and/or acquiring effective ed-tech products?	
Standard evaluation rubrics for judging the quality of products	All participants
Guidelines for conducting effective pilot studies to determine how well a product works	All participants
Brief case studies or descriptions of “best practices” for ed-tech procurement by school districts	All participants
Guidelines for best practices by individual district stakeholder groups (administration, businesses, end-users, etc.)	All participants
Guidelines for best practices for providers to use in working with school districts	All district participants
A national website for providers and school districts, which provides information on procurement practices, product availability, and evidence	All participants
Standard contract language developed by a respected third party	Superintendents, Curriculum Directors, Business Officers, Technology Directors, Providers
Other (please specify and rate):	All participants
Guidelines for district expansion after the pilot phase without a new competitive procurement process	Providers
Guidelines for providers in building relationships with school districts.	Providers
Policies for district contracting without a RFP process	Providers

APPENDIX E: INTERVIEW QUESTIONS

INTERVIEW QUESTION	RESPONDENT(S)
Today, ed tech products are often associated with supporting “personalized learning.” There are certainly different forms of personalized learning as well as different conceptions of how such support takes place. Given the goals for your district, what is your view about the degree to which and HOW personalized learning will be facilitated by the acquired ed tech products?	Superintendents, Curriculum Directors, Principals
<p>Okay, I’d now like your reactions to whether any of the following types of personalized learning seem relevant to your ed tech procurement goals. As I describe each, informally rate your perceptions of its importance as an ed tech focus, where 3 = high, 2 = moderate, and 1 = low.</p> <p><i>Learner Profiles:</i> Assessment data are used to understand each learner’s unique academic and non-academic needs, strengths, and weaknesses.</p> <p><i>Personal Learning Paths:</i> Assessment data are used to generate unique and adaptive goals and learning plans for each student.</p> <p><i>Competency-based Progression:</i> Student learning is continually assessed against clearly defined expectations and goals. Each student advances as s/he demonstrates mastery.</p> <p><i>Flexible learning Environments:</i> Learning opportunities are enabled and expanded by permitting flexibility in space, location, schedule, student groupings, and staffing.</p>	Superintendents, Curriculum Directors, Principals
Explain the processes in your district by which ed tech products are identified, reviewed, and acquired.	All district participants
Is too much taken for any of these steps? If so, can the time be reduced? Can it start and end at any time or only in a certain “windows”?	All district participants
Explain the processes typically involved in selling your ed-tech products to school districts—marketing, communications, applying to RFPs, negotiating costs and services, etc.	Provider
How does the procurement of ed tech products differ from that for other products like textbooks or equipment?	All district participants
	Provider
To what degree and how are end-users (teachers and principals) involved	All participants
In this regard, to what degree, if at all, do the individual schools rather than the district influence or even control the acquisitions?	Superintendent, Curriculum Directors, Technology Directors, Principals
Is there is positive collaboration and harmony among those making instructional decisions (teachers) and those controlling purchasing (business officers, administrators, etc.)?	Superintendent, Curriculum Directors, Technology Directors, Principals
What other district staff or stakeholders are involved	All participants
To what degree and how is the school board involved?	Providers
To what degree and how is the superintendent involved?	Providers
To what degree and how does evidence about a product’s effectiveness play a role in its selection?	All district participants
Are particular types/sources of evidence viewed more seriously?	All district participants
Does your district pilot test ed tech products being considered for purchase? If so, what piloting strategies are used and to what degree are you satisfied with their usefulness?	All district participants
Are Pilots (demos) a useful strategy to work with a new providers? Why or why not?	Providers

APPENDIX E: INTERVIEW QUESTIONS

Formal pilot studies involve systematic field-tests over several months and typically include standard evaluation instruments such as surveys, rubrics, observations, and the like.] Do you see the district doing so in the future? Why or why not?	All district participants
How helpful would it be to have a set of “guidelines” on best practices in conducting formal studies?	All district participants
Do data privacy or security concerns affect your selection or purchases of ed tech products? If so, how?	Superintendents, Business Officers
What are the most important selling points (qualities or features) of your products which result in their selection by school districts over competitors’ products?	Providers
What are the financial cut points – the size of a deal, in dollars – that would trigger school board approval, the use of a formal RFP, other competitive bidding process, sole source, or “hand shake?”	Superintendents, Business Officers
What are other factors that may result in use of a formal RFP, simple bidding, a sole source contract, etc.?	Superintendents, Business Officers
To what degree are RFPs as opposed to a more informal process used?	Providers
How does the procurement of ed tech products differ from that for other products like textbooks or equipment?	All district participants
Do products that bundle the software products and hardware have any competitive advantage?	Business Officers
Discuss the degree to which focus is placed on software vs. hardware issues in selling products?	Providers
To what degree does your district engage in cooperative purchasing with other districts? What do you believe to be advantages and disadvantages of that type of process?	Business Officers, Technology Directors
Do you encounter any cooperative purchasing agreements, piggyback RFPs or pooled purchasing methods (regional service centers, state to state, etc.) used by districts? If so, please describe how such strategies affect selling your products to districts.	Providers
Would it be helpful to your district to have tools (such as RFP templates) that simplify purchasing processes? If so, why?	Superintendents, Business Officers
Some district stakeholders say, “I know what we need, but it’s difficult to actually get it.” Do you agree with this perception? Explain.	All district participants
Do state or local laws restrict practices?	All district participants
Do state or local laws create any barriers? Explain	Providers
What types of educational outcomes, in your view, are the primary determinants of district interests for particular ed tech products?	Curriculum Directors, Principals
To what degree and how systematically is the actual procurement process driven by those educational goals; and by specific curriculum needs?	Curriculum Directors, Technology Directors, Principals
What are the factors that influence how effectively teachers use the ed tech products acquired? To what degree and how do ed tech procurement decisions address those needs?	Curriculum Directors, Technology Directors, Principals
Overall, what procurement practices work <i>most</i> effectively in your district and why?	All district participants
What procurement practices by school districts best facilitate the acquisition of the ed-tech products needed by teachers and students?	Providers

APPENDIX E: INTERVIEW QUESTIONS

What other major restrictions or challenges (if any) do you face?	All district participants
What procurement practices by school districts impede the acquisition of the ed-tech products needed by teachers and students?	Providers
What are the challenges you face in selling your products to school districts?	Providers
Are there risks to selecting innovative products from emerging and less-established providers, as opposed to selecting “high-profile” products from well-known providers? If so, describe them.	All district participants
What advice would you offer providers to more effectively work with district officials, school leaders, and teachers?	All district participants
What advice would you offer school districts to work more effectively with providers?	Providers
What new tools, guidelines, or information would be most helpful to your district for improving the ed-tech procurement process?	All participants
A recent study by the Gates Foundation found that, overall, teachers were dissatisfied with the ed tech products they had available to support instruction and learning. Does this finding surprise you? Why or why not?	Superintendents, Curriculum Directors, Technology Directors, Principals
What changes do you anticipate in any of these things?	All district participants
The RFP process is frequently identified by providers as hindering the sales of ed tech products to school districts due to cost and time of completing applications. Some smaller providers also perceive a bias toward larger providers who are able to more easily and quickly respond to RFP. What are your reactions to the fairness and usefulness of RFPs? What aspects could be changed under current state or municipal laws to improve the process? What aspects would you change if you could?	Business Officers

Appendix F: Descriptive Statistics and Response Frequencies for Research Question 1

Indicate your degree of satisfaction with each of the following aspects of procuring ed-tech products:

1. The district's processes for identifying, evaluating, and acquiring needed ed-tech products

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	0.0	4.7	18.6	58.1	18.6	3.91	0.75
Principal	0.0	8.7	26.2	51.5	13.6	3.70	0.82
Technology Director	0.0	13.6	15.3	50.8	20.3	3.78	0.93
Curriculum Director	2.3	13.6	13.6	65.9	4.5	3.57	0.87
Business Officer	2.4	16.7	21.4	47.6	11.9	3.50	0.99
Provider	21.3	44.7	27.7	6.4	0.0	2.19 ^a	0.85

^a Providers scored lower than all other stakeholders, $p < .001$

2. The district's competitive procurement processes (RFP or other) for obtaining/processing applications from vendors

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	0.0	4.7	23.3	55.8	16.3	3.84	0.75
Technology Director	0.0	12.1	27.6	37.9	22.4	3.71	0.96
Curriculum Director	0.0	0.0	34.1	56.1	9.8	3.76	0.62
Business Officer	2.4	4.8	11.9	57.1	23.8	3.95	0.88

3. The district's non-competitive procurement processes (sole source or other) for obtaining/processing applications from vendors.

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	0.0	7.0	7.0	69.8	16.3	3.95	0.72
Business Officer	2.4	2.4	21.4	59.5	14.3	3.81	0.80

4. Communications between district stakeholders (curriculum director, principals, teachers, ed-tech director, procurement officer, myself) regarding products to address specific instructional needs.

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	0.0	14.0	18.6	44.2	23.3	3.77	0.97
Principal	1.0	18.4	23.3	37.9	19.4	3.56	1.04
Technology Director	6.8	25.4	18.6	40.7	8.5	3.19	1.12
Curriculum Director	4.5	6.8	25.0	54.5	9.1	3.57	0.93
Business Officer	2.4	22.0	22.0	43.9	9.8	3.37	1.02

5. The involvement by end-users (e.g., principals and teachers) in the selection and acquisition of products.

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	0.0	18.6	11.6	62.8	7.0	3.58	0.88
Principal	1.0	23.3	23.3	39.8	12.6	3.40	1.01
Technology Director	3.4	27.1	16.9	45.8	6.8	3.25	1.04
Curriculum Director	2.3	13.6	22.7	50.0	11.4	3.55	0.95
Business Officer	2.4	7.3	34.1	46.3	9.8	3.54	0.87
Provider	4.3	29.8	34.0	29.8	2.1	2.96 ^a	0.93

^a Providers scored lower than Superintendents, $p < .001$, Curriculum Directors, $p < .001$, and Procurement Officers, $p < .001$.

6. Providers' knowledge of state, municipal, and district purchasing policies

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	0.0	11.6	37.2	44.2	7.0	3.47	0.80
Business Officer	2.4	11.9	21.4	50.0	14.3	3.62	0.96

7. The credibility of product effectiveness evidence submitted by providers

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	4.7	14.0	32.6	46.5	2.3	3.28	0.91
Principal	1.0	8.8	32.4	48.0	9.8	3.57 ^a	0.83
Technology Director	1.7	27.1	42.4	27.1	1.7	3.00 ^a	0.83
Curriculum Director	0.0	27.3	29.5	38.6	4.5	3.20	0.90
Business Officer	2.4	9.8	41.5	41.5	4.9	3.37	0.83

^a Principals scored higher than Technology Directors, $p < .001$.

8. The time required to complete procurement processes and bring products to end-users

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	4.7	23.3	11.6	55.8	4.7	3.33	1.04
Principal	2.9	17.5	34.0	40.8	4.9	3.27	0.91
Technology Director	3.4	29.3	24.1	39.7	3.4	3.10	0.99
Curriculum Director	4.5	38.6	20.5	34.1	2.3	2.91	1.01
Business Officer	2.4	38.1	11.9	40.5	7.1	3.12	1.09
Provider	23.4	48.9	8.5	19.1	0.0	2.23 ^a	1.03

^a Providers scored lower than all other stakeholders, $p < .001$.

9. The success of typical purchasing decisions in obtaining the desired ed-tech products that meet specifically identified instructional needs

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	0.0	4.7	18.6	67.4	9.3	3.81	0.66
Principal	1.0	11.7	26.2	48.5	12.6	3.60	0.89
Technology Director	1.7	12.1	22.4	51.7	12.1	3.60	0.92
Curriculum Director	2.3	6.8	18.2	65.9	6.8	3.68	0.80
Business Officer	2.4	2.4	31.0	54.8	9.5	3.67	0.79

10. State or municipal laws that govern procurement processes

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	9.3	11.6	27.9	46.5	4.7	3.26	1.05
Curriculum Director	0.0	0.0	70.5	27.3	2.3	3.32	0.52
Business Officer	0.0	23.8	16.7	52.4	7.1	3.43	0.94
Provider	25.5	25.5	36.2	10.6	2.1	2.38 ^a	1.05

^a Providers scored lower than all other stakeholders, $p < .001$.

11. The involvement of the school board in procurement processes

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Superintendent	2.3	0.0	14.0	69.8	14.0	3.93 ^b	0.70
Curriculum Director	0.0	9.1	38.6	45.5	6.8	3.50	0.76
Business Officer	0.0	4.8	31.0	47.6	16.7	3.76	0.79
Provider	6.4	25.5	59.6	8.5	0.0	2.70 ^a	0.72

^a Providers scored lower than all other stakeholders, $p < .001$.

^b Superintendents scored higher than Curriculum Directors, $p < .001$

The processes for identifying, evaluating, and acquiring needed ed-tech products at the classroom level

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Principal	0.0	17.5	21.4	43.7	17.5	3.61	0.97

The processes for identifying, evaluating, and acquiring needed ed-tech products at the school level

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Principal	0.0	9.7	26.2	43.7	20.4	3.75 ^a	0.89
Technology Director	0.0	23.7	18.6	45.8	11.9	3.46	0.99
Curriculum Director	2.4	17.1	31.7	46.3	2.4	3.29	0.87

^a Principals scored higher than Curriculum Directors, $p = .01$.

Gaining acceptance or visibility in a district

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Provider	10.6	44.7	21.3	19.1	4.3	2.62	1.05

Information provided by the district regarding buying cycles and purchasing policies

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Provider	23.4	40.4	25.5	10.6	0.0	2.23	0.94

Districts' openness to contracting with for-profit providers

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Provider	2.1	17	40.4	34	6.4	3.26	0.87

Provider access to district decision makers regarding the procurement process

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Provider	4.3	55.3	34	6.4	0.0	2.43	0.68

Opportunities for conducting pilots in district schools

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Provider	4.3	29.8	25.5	36.2	4.3	3.06	1.01

Opportunities to expand from pilots to a broader implementation (without a complicated procurement process or RFP)

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Provider	12.8	31.9	31.9	21.3	2.1	2.68	1.02

Your understanding of districts' instructional needs and preferred pedagogies

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Provider	4.3	19.1	34	36.2	6.4	3.21	0.98

Districts' demands for evidence regarding product effectiveness

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Provider	4.3	17	44.7	34	0.0	3.09	0.83

Indicate your level of agreement or disagreement with each of the following statements.

12. District procurement processes meet contemporary needs for product acquisitions

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Superintendent	2.3	16.3	11.6	65.1	4.7	3.53	0.91
Principal	0.0	15.5	27.2	41.7	15.5	3.57	0.94
Technology Director	1.7	23.7	20.3	42.4	11.9	3.39	1.03
Curriculum Director	2.3	13.6	20.5	56.8	6.8	3.52	0.90
Business Officer	0.0	23.8	19.0	45.2	11.9	3.45	0.99
Provider	34.8	43.5	17.4	4.3	0.0	1.91 ^a	0.84

^a Providers scored lower than all other stakeholders, $p < .001$.

13. De-centralized school procurement processes (significant school autonomy) are desirable for acquiring needed ed-tech products

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Superintendent	14.0	41.9	16.3	18.6	9.3	2.67	1.21
Principal	0.0	21.4	20.4	43.7	14.6	3.51 ^a	0.99
Technology Director	23.7	44.1	15.3	13.6	3.4	2.29	1.08
Curriculum Director	18.2	34.1	27.3	15.9	4.5	2.55	1.11
Business Officer	28.6	47.6	9.5	14.3	0.0	2.10	0.98
Provider	21.3	25.5	23.4	27.7	2.1	2.64	1.17

^a Principals scored higher than all other stakeholders, $p < .001$.

14. The district would be likely to use standardized RFPs and contract documents that reflect best practices nationally

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Superintendent	4.7	4.7	18.6	58.1	14.0	3.72	0.93
Technology Director	3.4	15.3	18.6	40.7	22.0	3.63	1.10
Curriculum Director	0.0	11.4	22.7	59.1	6.8	3.61	0.78
Business Officer	0.0	2.4	7.1	69.0	21.4	4.10 ^a	0.62

^a Business Officers scored higher than Curriculum Director, $p < .001$.

15. Our procurement processes help me buy the products I already know I want even if from less established providers/brands

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Superintendent	4.7	9.3	32.6	53.5	0.0	3.35	0.84
Technology Director	1.7	10.2	33.9	47.5	6.8	3.47	0.84
Curriculum Director	2.3	20.5	20.5	52.3	4.5	3.36	0.94

16. If procurement processes were more efficient (e.g., quicker, less demanding on districts and providers), product costs would decrease

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Superintendent	0.0	23.3	25.6	46.5	4.7	3.33	0.89
Technology Director	3.4	27.1	28.8	30.5	10.2	3.17	1.05
Business Officer	4.8	16.7	26.2	38.1	14.3	3.40	1.08
Provider	0.0	14.9	25.5	29.8	29.8	3.74	1.05

17. Data privacy and security needs make procurement processes more difficult for ed-tech products than for other products

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Superintendent	4.7	14.0	30.2	44.2	7.0	3.35	0.97
Technology Director	0.0	30.5	32.2	27.1	10.2	3.17	0.99

I feel secure in my role to pursue the products that appear most effective even if from less established providers/brands

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Principal	5.8	15.5	26.2	38.8	13.6	3.39	1.09

Using standardized RFPs and contract documents that reflect best practices nationally would be desirable in improving procurement processes

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Provider	10.6	12.8	21.3	46.8	8.5	3.30	1.14

The development of our products is directly informed by research evidence and educational outcomes

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Provider	0.0	4.3	6.4	31.9	57.4	4.43	0.80

The development of our products is influenced directly by expected requirements for selling them to districts (i.e., typical district procurement processes)

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Provider	6.4	17.0	14.9	38.3	23.4	3.55	1.21

Using standardized RFPs and contract documents that reflect best practices nationally would be desirable in improving procurement processes

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Provider	10.6	12.8	21.3	46.8	8.5	3.30	1.14

The development of our products is directly informed by research evidence and educational outcomes

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Provider	0.0	4.3	6.4	31.9	57.4	4.43	0.80

The development of our products is influenced directly by expected requirements for selling them to districts (i.e., typical district procurement processes)

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Provider	6.4	17.0	14.9	38.3	23.4	3.55	1.21

Rate the degree to which each of the following individuals or groups are involved in procurement processes for ed-tech products.

18. Parents

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	50.0	23.8	26.2	0.0	0.0	1.76	0.85	
Principal	48.0	23.0	21.0	7.0	1.0	1.90	1.03	
Technology Director	40.7	39.0	15.3	3.4	1.7	1.86	0.92	
Curriculum Director	46.3	36.6	14.6	2.4	0.0	1.73	0.81	
Business Officer	56.8	21.6	18.9	2.7	0.0	1.68	0.88	
Provider	57.9	26.3	13.2	0.0	2.6	1.63	0.91	

19. Students

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	23.8	21.4	35.7	14.3	4.8	2.55	1.15	
Principal	41.6	18.8	22.8	12.9	4.0	2.19	1.22	
Technology Director	18.6	30.5	33.9	13.6	3.4	2.53	1.06	
Curriculum Director	45.2	21.4	23.8	9.5	0.0	1.98	1.05	
Business Officer	35.0	22.5	30.0	12.5	0.0	2.20	1.07	
Provider	53.7	22.0	17.1	4.9	2.4	1.80 ^a	1.05	

^a Providers scored lower than Superintendents and Technology Directors, $p < .001$.

20. Teachers

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	4.7	7.0	27.9	39.5	20.9	3.65	1.04	
Principal	11.8	13.7	29.4	25.5	19.6	3.27	1.26	
Technology Director	3.4	3.4	39.0	30.5	23.7	3.68	0.99	
Curriculum Director	4.7	14.0	34.9	23.3	23.3	3.47	1.14	
Business Officer	2.4	9.8	36.6	39.0	12.2	3.49	0.93	
Provider	6.5	15.2	41.3	26.1	10.9	3.20	1.05	

21. Principals

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	0.0	2.3	25.6	48.8	23.3	3.93	0.77	
Principal	6.8	8.7	35.0	25.2	24.3	3.51	1.15	
Technology Director	3.4	5.1	25.4	33.9	32.2	3.86	1.04	
Curriculum Director	2.3	2.3	39.5	27.9	27.9	3.77	0.97	
Business Officer	0.0	4.9	22.0	51.2	22.0	3.90	0.80	
Provider	2.2	4.3	37.0	34.8	21.7	3.70	0.94	

22. Chief Academic Officer (Curriculum Director or similar)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	0.0	0.0	7.1	40.5	52.4	4.45	0.63	
Principal	2.0	3.0	19.0	42.0	34.0	4.03	0.92	
Technology Director	3.4	3.4	8.5	28.8	55.9	4.31	1.00	
Curriculum Director	2.3	2.3	9.1	38.6	47.7	4.27	0.90	
Business Officer	2.4	0.0	17.1	36.6	43.9	4.20	0.90	
Provider	0.0	2.1	6.4	34.0	57.4	4.47 ^a	0.72	

^a Providers scored higher than Principals, $p < .001$.

23. Chief Financial Officer

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	4.8	14.3	28.6	28.6	23.8	3.52	1.15	
Principal	5.1	11.1	22.2	41.4	20.2	3.61	1.09	
Technology Director	5.3	10.5	31.6	28.1	24.6	3.56	1.13	
Curriculum Director	11.6	7.0	23.3	34.9	23.3	3.51	1.26	
Business Officer	14.6	7.3	31.7	29.3	17.1	3.27	1.27	
Provider	13.6	27.3	40.9	11.4	6.8	2.70 ^a	1.07	

^a Providers scored lower than Superintendents, $p < .001$, Principals, $p < .001$, Technology Directors, $p < .001$, and Curriculum Directors, $p < .001$.

24. Chief Information Officer

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	2.9	11.8	23.5	20.6	41.2	3.85	1.18	
Principal	11.4	15.2	21.5	32.9	19.0	3.33	1.27	
Technology Director	3.7	1.9	11.1	14.8	68.5	4.43 ^a	1.02	
Curriculum Director	17.6	8.8	29.4	26.5	17.6	3.18	1.34	
Business Officer	3.1	9.4	28.1	15.6	43.8	3.87	1.19	
Provider	13.0	15.2	39.1	19.6	13.0	3.04	1.19	

^a Technology Directors scored higher than Superintendents, $p = .01$, Business Officers, $p = .02$, and Providers, $p < .001$.

25. Chief Purchasing Officer

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Superintendent	5.6	8.3	27.8	13.9	44.4	3.83	1.25
Principal	4.5	7.9	23.6	42.7	21.3	3.69	1.04
Technology							
Director	5.8	7.7	30.8	19.2	36.5	3.73	1.21
Curriculum							
Director	11.4	5.7	31.4	22.9	28.6	3.51	1.29
Business Officer	5.0	7.5	17.5	27.5	42.5	3.95 ^a	1.18
Provider	12.2	22.0	26.8	22.0	17.1	3.10	1.28

^a Business Officers scored higher than Providers, $p < .001$.

26. Technology Director

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Superintendent	0.0	0.0	0.0	14.3	85.7	4.86	0.35
Principal	0.0	1.0	7.8	20.6	70.6	4.61	0.68
Technology							
Director	0.0	1.7	3.4	6.8	88.1	4.81	0.57
Curriculum							
Director	0.0	0.0	6.8	25.0	68.2	4.61	0.62
Business Officer	0.0	0.0	10.0	17.5	72.5	4.62	0.67
Provider	2.3	9.1	31.8	29.5	27.3	3.70 ^a	1.05

^a Providers scored lower than all other stakeholders, $p < .001$.

27. School Board

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Superintendent	7.0	27.9	46.5	14.0	4.7	2.81	0.93
Principal	10.9	20.8	27.7	20.8	19.8	3.18 ^a	1.28
Technology							
Director	14.3	32.1	26.8	19.6	7.1	2.73	1.15
Curriculum							
Director	16.7	28.6	35.7	14.3	4.8	2.62	1.08
Business Officer	23.1	28.2	20.5	23.1	5.1	2.59	1.23
Provider	22.2	31.1	42.2	2.2	2.2	2.31	0.93

^a Principals scored higher than Providers, $p < .001$.

28. Yourself (superintendent)

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Superintendent	0.0	9.3	27.9	27.9	34.9	3.88	1.01
Principal	1.0	10.9	19.8	33.7	34.7	3.90	1.03
Technology							
Director	1.7	18.6	25.4	22.0	32.2	3.64	1.17
Curriculum							
Director	0.0	7.0	30.2	16.3	46.5	4.02	1.04
Business Officer	7.3	9.8	24.4	26.8	31.7	3.66	1.24
Provider	8.7	13.0	28.3	28.3	21.7	3.41	1.22

29. Other (please specify and rate)

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Superintendent	0.0	0.0	60.0	20.0	20.0	3.60	0.89
Principal	0.0	50.0	0.0	33.3	16.7	3.17	1.33
Technology							
Director	16.7	0.0	16.7	33.3	33.3	3.67	1.44
Curriculum							
Director	0.0	0.0	0.0	100.0	0.0	4.00	0.00
Business Officer	0.0	0.0	33.3	33.3	33.3	4.00	1.00
Provider	7.7	7.7	15.4	23.1	46.2	3.92	1.32

To what degree does the district rely on each of the following to identify, select, and acquire quality products?

30. A formal, competitive decision-making process (e.g., RFP)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	7.1	4.8	14.3	45.2	28.6	3.83	1.12	
Principal	2.0	10.8	36.3	37.3	13.7	3.50	0.93	
Technology Director	10.2	13.6	27.1	32.2	16.9	3.32	1.21	
Curriculum Director	2.3	13.6	29.5	27.3	27.3	3.64	1.10	
Business Officer	4.8	4.8	31.0	40.5	19.0	3.64	1.01	
Provider	6.4	14.9	29.8	31.9	17.0	3.38	1.13	

31. A noncompetitive procurement process (sole source or other)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	0.0	19.0	45.2	31.0	4.8	3.21	0.81	
Principal	15.8	15.8	31.7	30.7	5.9	2.95	1.16	
Technology Director	5.1	16.9	39.0	25.4	13.6	3.25	1.06	
Curriculum Director	2.3	13.6	31.8	36.4	15.9	3.50	1.00	
Business Officer	7.1	21.4	23.8	35.7	11.9	3.24	1.14	
Provider	2.1	21.3	29.8	34.0	12.8	3.34	1.03	

32. A cooperative purchasing process with other districts

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	14.3	23.8	21.4	35.7	4.8	2.93	1.18	
Business Officer	11.9	21.4	19.0	28.6	19.0	3.21 ^a	1.32	
Provider	21.7	26.1	32.6	19.6	0.0	2.50	1.05	

^a Business Officers scored higher than Providers, $p = .01$.

33. Rigorous evaluation evidence (from published studies, literature reviews, etc.)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	2.4	9.5	33.3	35.7	19.0	3.60	0.99	
Principal	2.9	15.5	24.3	45.6	11.7	3.48	0.99	
Technology Director	1.7	20.3	35.6	37.3	5.1	3.24	0.90	
Curriculum Director	2.3	11.6	41.9	30.2	14.0	3.42	0.96	
Business Officer	7.1	21.4	35.7	31.0	4.8	3.05	1.01	
Provider	6.4	25.5	29.8	29.8	8.5	3.09	1.08	

34. Non-rigorous evaluation evidence (e.g., from providers' in-house studies)

Stakeholder	Not at All		Moderately		Extensively	M	SD
	%	%	%	%	%		
Superintendent	4.8	26.2	47.6	14.3	7.1	2.93	0.95
Principal	10.7	19.4	40.8	23.3	5.8	2.94	1.05
Technology							
Director	5.1	27.1	39.0	27.1	1.7	2.93	0.91
Curriculum							
Director	0.0	29.5	50.0	15.9	4.5	2.95	0.81
Business Officer	14.3	23.8	47.6	11.9	2.4	2.64	0.96
Provider	2.1	12.8	21.3	42.6	21.3	3.68 ^a	1.02

^a Providers scored higher than all other stakeholders, $p < .001$.

35. Recommendations from sales representatives

Stakeholder	Not at All		Moderately		Extensively	M	SD
	%	%	%	%	%		
Superintendent	9.5	35.7	40.5	11.9	2.4	2.62	0.91
Principal	4.9	19.4	57.3	14.6	3.9	2.93	0.83
Technology							
Director	6.8	40.7	32.2	13.6	6.8	2.73	1.01
Curriculum							
Director	2.3	31.8	45.5	13.6	6.8	2.91	0.91
Business Officer	7.1	38.1	38.1	14.3	2.4	2.67	0.90
Provider	8.5	17.0	44.7	23.4	6.4	3.02	1.01

36. Recommendations from end-users (principals or teachers)

Stakeholder	Not at All		Moderately		Extensively	M	SD
	%	%	%	%	%		
Superintendent	0.0	0.0	17.1	56.1	26.8	4.10 ^a	0.66
Principal	4.9	7.8	35.0	36.9	15.5	3.50	1.01
Technology							
Director	3.4	5.1	33.9	52.5	5.1	3.51	0.82
Curriculum							
Director	4.5	2.3	27.3	45.5	20.5	3.75	0.97
Business Officer	0.0	7.1	31.0	47.6	14.3	3.69	0.81
Provider	2.1	4.3	14.9	55.3	23.4	3.94 ^b	0.87

^a Superintendents scored higher than Principals, $p < .001$ and Technology Directors, $p < .001$.

^b Providers scored higher than Principals, $p = .01$ and Technology Directors, $p < .001$.

37. Recommendations from other districts or consultants

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	0.0	0.0	23.8	52.4	23.8	4.00 ^a	0.70	
Principal	2.0	7.8	38.2	38.2	13.7	3.54	0.90	
Technology								
Director	1.7	0.0	30.5	52.5	15.3	3.80	0.76	
Curriculum								
Director	4.8	7.1	31.0	35.7	21.4	3.62	1.06	
Business Officer	0.0	7.1	45.2	33.3	14.3	3.55	0.83	
Provider	0.0	4.3	14.9	44.7	36.2	4.13 ^b	0.82	

^a Superintendents scored higher than Principals, $p < .001$ and Business Officers, $p < .001$.

^b Providers scored higher than Principals, $p < .001$ and Business Officers, $p = .01$.

38. Choosing from a list of “approved” (or recognized) providers/brands

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	4.9	9.8	34.1	48.8	2.4	3.34	0.88	
Principal	4.9	9.7	35.0	42.7	7.8	3.39	0.94	
Technology								
Director	6.8	18.6	27.1	39.0	8.5	3.24	1.07	
Curriculum								
Director	4.5	22.7	27.3	38.6	6.8	3.20	1.03	
Business Officer	7.1	9.5	35.7	40.5	7.1	3.31	1.00	
Provider	10.6	21.3	27.7	34.0	6.4	3.04	1.12	

39. Recommendations or ratings on an informational website (please specify which):

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	25.6	23.1	28.2	20.5	2.6	2.51	1.17	
Principal	26.1	22.7	33.0	17.0	1.1	2.44	1.09	
Technology								
Director	15.8	26.3	42.1	15.8	0.0	2.58	0.94	
Curriculum								
Director	23.8	23.8	38.1	7.1	7.1	2.50	1.15	
Business Officer	34.2	26.3	28.9	7.9	2.6	2.18	1.09	
Provider	40.9	20.5	29.5	4.5	4.5	2.11	1.15	

40. Pilot tryouts of products within the district

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	0.0	0.0	19.0	42.9	38.1	4.19 ^a	0.74	
Principal	2.9	3.9	29.1	42.7	21.4	3.76	0.93	
Technology								
Director	0.0	8.5	37.3	30.5	23.7	3.69	0.93	
Curriculum								
Director	0.0	6.8	34.1	25.0	34.1	3.86	0.98	
Business Officer	4.8	14.3	31.0	38.1	11.9	3.38	1.04	
Provider	2.1	19.1	36.2	29.8	12.8	3.32	1.00	

^a Superintendents scored higher than Business Officers, $p < .001$ and Providers, $p < .001$.

41. Products with the lowest cost

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	0.0	16.7	45.2	31.0	7.1	3.29 ^a	0.84	
Business Officer	9.5	31.0	38.1	19.0	2.4	2.74	0.96	
Provider	4.3	23.4	27.7	36.2	8.5	3.21	1.04	

^a Superintendents scored higher than Business Officers, $p = .01$.

42. “Bundled” products (both software and hardware together)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	7.1	21.4	28.6	38.1	4.8	3.12 ^a	1.04	
Technology								
Director	13.6	27.1	45.8	13.6	0.0	2.59	0.89	
Business Officer	9.8	19.5	39.0	24.4	7.3	3.00	1.07	
Provider	30.4	23.9	32.6	13.0	0.0	2.28 ^b	1.05	

^a Superintendents scored higher than Technology Directors, $p = .01$.

^b Providers scored lower than Superintendents, $p < .001$ and Business Officers, $p < .001$.

43. Other (please specify and rate):

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Superintendent	63.6	0.0	9.1	18.2	9.1	2.09	1.58	
Principal	80.6	0.0	8.3	8.3	2.8	1.53	1.13	
Technology								
Director	52.0	8.0	12.0	8.0	20.0	2.36	1.66	
Curriculum								
Director	78.6	7.1	7.1	0.0	7.1	1.50	1.16	
Business Officer	73.3	13.3	0.0	6.7	6.7	1.60	1.24	
Provider	64.3	3.6	7.1	10.7	14.3	2.07	1.59	

Your recommendations

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Technology Director	3.4	1.7	23.7	55.9	15.3		3.78 ^a	0.85
Curriculum Director	4.9	19.5	39.0	31.7	4.9		3.12	0.95

^a Technology Directors scored higher than Curriculum Directors, $p < .001$.

To what degree might the following tools and guidelines be helpful to your district in identifying, evaluating, and/or acquiring effective ed-tech products?

44. Standard evaluation rubrics for judging the quality of products

Stakeholder	Not helpful at All		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Superintendent	0.0	4.7	18.6	51.2	25.6		3.98	0.80
Principal	1.0	6.8	29.1	40.8	22.3		3.77	0.91
Technology Director	5.2	5.2	31.0	34.5	24.1		3.67	1.07
Curriculum Director	0.0	2.3	34.1	29.5	34.1		3.95	0.89
Business Officer	0.0	4.8	33.3	47.6	14.3		3.71	0.77
Provider	4.3	10.6	34.0	25.5	25.5		3.57	1.12

45. Guidelines for conducting effective pilot studies to determine how well a product works

Stakeholder	Not helpful at All		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Superintendent	0.0	11.6	14.0	46.5	27.9		3.91	0.95
Principal	0.0	4.9	19.4	40.8	35.0		4.06	0.86
Technology Director	0.0	3.4	33.9	30.5	32.2		3.92	0.90
Curriculum Director	2.3	0.0	36.4	31.8	29.5		3.86	0.93
Business Officer	0.0	7.1	28.6	50.0	14.3		3.71	0.81
Provider	0.0	8.5	25.5	31.9	34.0		3.91	0.97

46. Brief case studies or descriptions of “best practices” for ed-tech procurement by school districts

Stakeholder	Not helpful at All		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Superintendent	0.0	7.0	23.3	32.6	37.2		4.00	0.95
Principal	1.0	9.7	24.3	37.9	27.2		3.81	0.98
Technology Director	0.0	6.8	39.0	33.9	20.3		3.68	0.88
Curriculum Director	2.3	6.8	27.3	40.9	22.7		3.75	0.97
Business Officer	0.0	7.1	33.3	47.6	11.9		3.64	0.79
Provider	0.0	2.1	21.3	55.3	21.3		3.96	0.72

47. Guidelines for best practices by individual district stakeholder groups (administration, businesses, end-users, etc.)

Stakeholder	Not helpful at All		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Superintendent	0.0	4.7	11.6	46.5	37.2	4.16 ^a	0.81	
Principal	1.0	4.9	30.1	34.0	30.1	3.87	0.94	
Technology Director	0.0	8.5	33.9	40.7	16.9	3.66	0.86	
Curriculum Director	2.3	0.0	34.1	43.2	20.5	3.80	0.85	
Business Officer	0.0	4.8	38.1	45.2	11.9	3.64	0.76	
Provider	2.1	4.3	21.3	57.4	14.9	3.79	0.83	

^a Superintendents scored higher than Business Officers, $p < .001$.

48. Guidelines for best practices for providers to use in working with school districts

Stakeholder	Not helpful at All		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Superintendent	0.0	9.3	23.3	41.9	25.6	3.84	0.92	
Principal	1.9	5.8	33.0	37.9	21.4	3.71	0.94	
Technology Director	0.0	10.2	40.7	32.2	16.9	3.56	0.90	
Curriculum Director	0.0	9.1	38.6	29.5	22.7	3.66	0.94	
Business Officer	0.0	4.8	23.8	59.5	11.9	3.79	0.72	

49. A national website for providers and school districts, which provides information on procurement practices, product availability, and evidence

Stakeholder	Not helpful at All		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Superintendent	0.0	9.3	25.6	39.5	25.6	3.81	0.93	
Principal	3.9	11.7	40.8	24.3	19.4	3.44	1.05	
Technology Director	0.0	18.6	30.5	32.2	18.6	3.51	1.01	
Curriculum Director	4.5	4.5	47.7	29.5	13.6	3.43	0.95	
Business Officer	0.0	7.1	19.0	57.1	16.7	3.83	0.79	
Provider	6.5	8.7	19.6	26.1	39.1	3.83	1.24	

50. Standard contract language developed by a respected third party

Stakeholder	Not helpful at All %	%	Moderately helpful %	%	Extensively helpful %	M	SD
Superintendent	2.3	11.6	23.3	41.9	20.9	3.67 ^a	1.02
Technology Director	3.4	13.6	42.4	23.7	16.9	3.37	1.03
Curriculum Director	4.5	20.5	43.2	22.7	9.1	3.11	0.99
Business Officer	0.0	7.1	31.0	40.5	21.4	3.76	0.88
Provider	6.4	23.4	14.9	38.3	17.0	3.36	1.21

^a Curriculum Directors scored lower than Superintendents, $p = .01$ and Business Officers, $p < .001$.

51. Other (please specify and rate):

Stakeholder	Not helpful at All %	%	Moderately helpful %	%	Extensively helpful %	M	SD
Superintendent	70.0	10.0	10.0	10.0	0.0	1.60	1.08
Principal	69.4	8.3	8.3	8.3	5.6	1.72	1.26
Technology Director	66.7	0.0	16.7	8.3	8.3	1.92	1.41
Curriculum Director	75.0	0.0	16.7	8.3	0.0	1.58	1.08
Business Officer	68.8	6.3	12.5	6.3	6.3	1.75	1.29
Provider	60.0	0.0	12.0	4.0	24.0	2.32	1.75

Guidelines for district expansion after the pilot phase without a new competitive procurement process

Stakeholder	Not helpful at All %	%	Moderately helpful %	%	Extensively helpful %	M	SD
Provider	0.0	4.3	12.8	38.3	44.7	4.23	0.84

Guidelines for providers in building relationships with school districts.

Stakeholder	Not helpful at All %	%	Moderately helpful %	%	Extensively helpful %	M	SD
Provider	6.4	14.9	23.4	31.9	23.4	3.51	1.20

Policies for district contracting without a RFP process

Stakeholder	Not helpful at All %	%	Moderately helpful %	%	Extensively helpful %	M	SD
Provider	2.1	6.4	12.8	46.8	31.9	4	0.96

Appendix G: Descriptive Statistics and Response Frequencies for District Size Comparison

Indicate your degree of satisfaction with each of the following aspects of procuring ed-tech products:

1. The district's processes for identifying, evaluating, and acquiring needed ed-tech products

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	0.0	0.0	21.7	60.9	17.4	3.96	0.64
Principal Technology	0.0	3.9	31.4	47.1	17.6	3.78	0.78
Director Curriculum	0.0	10.7	21.4	46.4	21.4	3.79	0.92
Director Business	4.5	9.1	9.1	72.7	4.5	3.64	0.90
Officer	0.0	20.0	25.0	35.0	20.0	3.55	1.05
Total Small District	0.7	7.6	23.6	51.4	16.7	3.76	0.85
Large District							
Superintendent	0.0	10.0	15.0	55.0	20.0	3.85	0.88
Principal Technology	0.0	13.5	21.2	55.8	9.6	3.62	0.84
Director Curriculum	0.0	16.1	9.7	54.8	19.4	3.77	0.96
Director Business	0.0	18.2	18.2	59.1	4.5	3.50	0.86
Officer	4.5	13.6	18.2	59.1	4.5	3.45	0.96
Total Large District	0.7	14.3	17.0	56.5	11.6	3.64	0.89

2. The district's competitive procurement processes (RFP or other) for obtaining/processing applications from vendors

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent Technology	0.0	8.7	26.1	52.2	13.0	3.70	0.82
Director Curriculum	0.0	11.1	29.6	48.1	11.1	3.59	0.84
Director Business	0.0	0.0	40.0	50.0	10.0	3.70	0.66
Officer	0.0	10.0	15.0	40.0	35.0	4.00	0.97
Total Small District	0.0	7.8	27.8	47.8	16.7	3.73	0.83
Large District							
Superintendent Technology	0.0	0.0	20.0	60.0	20.0	4.00	0.65
Director Curriculum	0.0	12.9	25.8	29.0	32.3	3.81	1.05
Director Business	0.0	0.0	28.6	61.9	9.5	3.81	0.60
Officer	4.5	0.0	9.1	72.7	13.6	3.91	0.81
Total Large District	1.1	4.3	21.3	53.2	20.2	3.87	0.82

3. The district's non-competitive procurement processes (sole source or other) for obtaining/processing applications from vendors.

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent Business	0.0	13.0	8.7	60.9	17.4	3.83	0.89
Officer	0.0	5.0	20.0	50.0	25.0	3.95	0.83
Total Small District	0.0	9.3	14.0	55.8	20.9	3.88	0.85
Large District							
Superintendent Business	0.0	0.0	5.0	80.0	15.0	4.10	0.45
Officer	4.5	0.0	22.7	68.2	4.5	3.68	0.78
Total Large District	2.4	0.0	14.3	73.8	9.5	3.88	0.67

4. Communications between district stakeholders (curriculum director, principals, teachers, ed-tech director, procurement officer, myself) regarding products to address specific instructional needs.

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	0.0	13.0	21.7	34.8	30.4	3.83	1.03
Principal	2.0	9.8	23.5	39.2	25.5	3.76	1.01
Technology Director	7.1	25.0	14.3	46.4	7.1	3.21	1.13
Curriculum Director	9.1	0.0	18.2	59.1	13.6	3.68	1.04
Business Officer	0.0	26.3	15.8	42.1	15.8	3.47	1.07
Total Small District	3.5	14.0	19.6	43.4	19.6	3.62 ^a	1.06
Large District							
Superintendent	0.0	15.0	15.0	55.0	15.0	3.70	0.92
Principal	0.0	26.9	23.1	36.5	13.5	3.37	1.03
Technology Director	6.5	25.8	22.6	35.5	9.7	3.16	1.13
Curriculum Director	0.0	13.6	31.8	50.0	4.5	3.45	0.80
Business Officer	4.5	18.2	27.3	45.5	4.5	3.27	0.99
Total Large District	2.0	21.8	23.8	42.2	10.2	3.37	1.00

^a Small Districts scored higher than Large Districts, $p = .03$.

5. The involvement by end-users (e.g., principals and teachers) in the selection and acquisition of products.

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	0.0	17.4	13.0	56.5	13.0	3.65	0.94
Principal	2.0	19.6	21.6	41.2	15.7	3.49	1.05
Technology Director	0.0	32.1	17.9	42.9	7.1	3.25	1.01
Curriculum Director	4.5	18.2	22.7	40.9	13.6	3.41	1.10
Business Officer	0.0	5.3	31.6	47.4	15.8	3.74	0.81
Total Small District	1.4	19.6	21.0	44.8	13.3	3.49	1.00
Large District							
Superintendent	0.0	20.0	10.0	70.0	0.0	3.50	0.83
Principal	0.0	26.9	25.0	38.5	9.6	3.31	0.98
Technology Director	6.5	22.6	16.1	48.4	6.5	3.26	1.09
Curriculum Director	0.0	9.1	22.7	59.1	9.1	3.68	0.78
Business Officer	4.5	9.1	36.4	45.5	4.5	3.36	0.90
Total Large District	2.0	19.7	22.4	49.0	6.8	3.39	0.95

6. Providers' knowledge of state, municipal, and district purchasing policies

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	0.0	13.0	34.8	43.5	8.7	3.48	0.85
Business Officer	0.0	15.0	15.0	55.0	15.0	3.70	0.92
Total Small District	0.0	14.0	25.6	48.8	11.6	3.58	0.88
Large District							
Superintendent	0.0	10.0	40.0	45.0	5.0	3.45	0.76
Business Officer	4.5	9.1	27.3	45.5	13.6	3.55	1.01
Total Large District	2.4	9.5	33.3	45.2	9.5	3.50	0.89

7. The credibility of product effectiveness evidence submitted by providers

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	4.3	13.0	26.1	52.2	4.3	3.39	0.94
Principal	0.0	7.8	31.4	52.9	7.8	3.61	0.75
Technology Director	3.6	10.7	57.1	25.0	3.6	3.14	0.80
Curriculum Director	0.0	27.3	22.7	45.5	4.5	3.27	0.94
Business Officer	0.0	10.5	47.4	31.6	10.5	3.42	0.84
Total Small District	1.4	12.6	36.4	43.4	6.3	3.41	0.84
Large District							
Superintendent	5.0	15.0	40.0	40.0	0.0	3.15	0.88
Principal	2.0	9.8	33.3	43.1	11.8	3.53	0.90
Technology Director	0.0	41.9	29.0	29.0	0.0	2.87	0.85
Curriculum Director	0.0	27.3	36.4	31.8	4.5	3.14	0.89
Business Officer	4.5	9.1	36.4	50.0	0.0	3.32	0.84
Total Large District	2.1	19.9	34.2	39.0	4.8	3.25	0.90

8. The time required to complete procurement processes and bring products to end-users

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	4.3	13.0	13.0	65.2	4.3	3.52	0.95
Principal	0.0	19.6	33.3	41.2	5.9	3.33	0.86
Technology Director	0.0	25.0	32.1	39.3	3.6	3.21	0.88
Curriculum Director	4.5	36.4	9.1	50.0	0.0	3.05	1.05
Business Officer	0.0	30.0	15.0	40.0	15.0	3.40	1.10
Total Small District	1.4	23.6	23.6	45.8	5.6	3.31 ^a	0.94
Large District							
Superintendent	5.0	35.0	10.0	45.0	5.0	3.10	1.12
Principal	5.8	15.4	34.6	40.4	3.8	3.21	0.96
Technology Director	6.7	33.3	16.7	40.0	3.3	3.00	1.08
Curriculum Director	4.5	40.9	31.8	18.2	4.5	2.77	0.97
Business Officer	4.5	45.5	9.1	40.9	0.0	2.86	1.04
Total Large District	5.5	30.1	23.3	37.7	3.4	3.03	1.02

^a Small Districts scored higher than Large Districts, $p = .03$.

9. The success of typical purchasing decisions in obtaining the desired ed-tech products that meet specifically identified instructional needs

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	0.0	4.3	13.0	69.6	13.0	3.91	0.67
Principal	2.0	7.8	25.5	51.0	13.7	3.67	0.89
Technology Director	0.0	7.1	32.1	50.0	10.7	3.64	0.78
Curriculum Director	4.5	4.5	13.6	68.2	9.1	3.73	0.88
Business Officer	0.0	0.0	25.0	65.0	10.0	3.85	0.59
Total Small District	1.4	5.6	22.9	58.3	11.8	3.74	0.79
Large District							
Superintendent	0.0	5.0	25.0	65.0	5.0	3.70	0.66
Principal	0.0	15.4	26.9	46.2	11.5	3.54	0.90
Technology Director	3.3	16.7	13.3	53.3	13.3	3.57	1.04
Curriculum Director	0.0	9.1	22.7	63.6	4.5	3.64	0.73
Business Officer	4.5	4.5	36.4	45.5	9.1	3.50	0.91
Total Large District	1.4	11.6	24.7	52.7	9.6	3.58	0.87

10. State or municipal laws that govern procurement processes

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent Curriculum	13.0	8.7	26.1	43.5	8.7	3.26	1.18
Director Business	0.0	0.0	68.2	31.8	0.0	3.32	0.48
Officer	0.0	20.0	15.0	55.0	10.0	3.55	0.95
Total Small District	4.6	9.2	36.9	43.1	6.2	3.37	0.91
Large District							
Superintendent Curriculum	5.0	15.0	30.0	50.0	0.0	3.25	0.91
Director Business	0.0	0.0	72.7	22.7	4.5	3.32	0.57
Officer	0.0	27.3	18.2	50.0	4.5	3.32	0.95
Total Large District	1.6	14.1	40.6	40.6	3.1	3.30	0.81

11. The involvement of the school board in procurement processes

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Superintendent Curriculum	0.0	0.0	17.4	65.2	17.4	4.00	0.60
Director Business	0.0	9.1	40.9	40.9	9.1	3.50	0.80
Officer	0.0	0.0	30.0	45.0	25.0	3.95	0.76
Total Small District	0.0	3.1	29.2	50.8	16.9	3.82	0.75
Large District							
Superintendent Curriculum	5.0	0.0	10.0	75.0	10.0	3.85	0.81
Director Business	0.0	9.1	36.4	50.0	4.5	3.50	0.74
Officer	0.0	9.1	31.8	50.0	9.1	3.59	0.80
Total Large District	1.6	6.3	26.6	57.8	7.8	3.64	0.78

The processes for identifying, evaluating, and acquiring needed ed-tech products at the classroom level

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Principal	0.0	15.7	21.6	41.2	21.6	3.69	0.99
Total Small District	0.0	15.7	21.6	41.2	21.6	3.69	0.99
Large District							
Principal	0.0	19.2	21.2	46.2	13.5	3.54	0.96
Total Large District	0.0	19.2	21.2	46.2	13.5	3.54	0.96

The processes for identifying, evaluating, and acquiring needed ed-tech products at the school level

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small District							
Principal	0.0	5.9	31.4	37.3	25.5	3.82	0.89
Technology Director	0.0	21.4	21.4	46.4	10.7	3.46	0.96
Curriculum Director	5.0	10.0	30.0	50.0	5.0	3.40	0.94
Total Small District	1.0	11.1	28.3	42.4	17.2	3.64	0.93
Large District							
Principal	0.0	13.5	21.2	50.0	15.4	3.67	0.90
Technology Director	0.0	25.8	16.1	45.2	12.9	3.45	1.03
Curriculum Director	0.0	23.8	33.3	42.9	0.0	3.19	0.81
Total Large District	0.0	19.2	22.1	47.1	11.5	3.51	0.94

Indicate your level of agreement or disagreement with each of the following statements.

12. District procurement processes meet contemporary needs for product acquisitions

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	0.0	8.7	4.3	78.3	8.7	3.87	0.69
Principal Technology Director	0.0	7.8	35.3	37.3	19.6	3.69	0.88
Curriculum Director	3.6	17.9	17.9	50.0	10.7	3.46	1.04
Business Officer	4.5	9.1	22.7	59.1	4.5	3.50	0.91
Total Small District	0.0	20.0	10.0	50.0	20.0	3.70	1.03
	1.4	11.8	21.5	51.4	13.9	3.65 ^a	0.91
Large District							
Superintendent	5.0	25.0	20.0	50.0	0.0	3.15	0.99
Principal Technology Director	0.0	23.1	19.2	46.2	11.5	3.46	0.98
Curriculum Director	0.0	29.0	22.6	35.5	12.9	3.32	1.05
Business Officer	0.0	18.2	18.2	54.5	9.1	3.55	0.91
Total Large District	0.0	27.3	27.3	40.9	4.5	3.23	0.92
	0.7	24.5	21.1	44.9	8.8	3.37	0.97

^a Small Districts scored higher than Large Districts, $p = .01$.

13. De-centralized school procurement processes (significant school autonomy) are desirable for acquiring needed ed-tech products

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	4.3	39.1	21.7	26.1	8.7	2.96	1.11
Principal	0.0	15.7	27.5	43.1	13.7	3.55	0.92
Technology Director	21.4	46.4	17.9	10.7	3.6	2.29	1.05
Curriculum Director	13.6	50.0	18.2	13.6	4.5	2.45	1.06
Business Officer	20.0	45.0	15.0	20.0	0.0	2.35	1.04
Total Small District	9.7	34.7	21.5	26.4	7.6	2.87	1.14
Large District							
Superintendent	25.0	45.0	10.0	10.0	10.0	2.35	1.27
Principal	0.0	26.9	13.5	44.2	15.4	3.48	1.06
Technology Director	25.8	41.9	12.9	16.1	3.2	2.29	1.13
Curriculum Director	22.7	18.2	36.4	18.2	4.5	2.64	1.18
Business Officer	36.4	50.0	4.5	9.1	0.0	1.86	0.89
Total Large District	17.7	34.7	15.0	24.5	8.2	2.71	1.25

14. The district would be likely to use standardized RFPs and contract documents that reflect best practices nationally

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	0.0	4.3	26.1	56.5	13.0	3.78	0.74
Technology Director	3.6	17.9	17.9	46.4	14.3	3.50	1.07
Curriculum Director	0.0	4.5	31.8	59.1	4.5	3.64	0.66
Business Officer	0.0	5.0	10.0	70.0	15.0	3.95	0.69
Total Small District	1.1	8.6	21.5	57.0	11.8	3.70	0.83
Large District							
Superintendent	10.0	5.0	10.0	60.0	15.0	3.65	1.14
Technology Director	3.2	12.9	19.4	35.5	29.0	3.74	1.13
Curriculum Director	0.0	18.2	13.6	59.1	9.1	3.59	0.91
Business Officer	0.0	0.0	4.5	68.2	27.3	4.23	0.53
Total Large District	3.2	9.5	12.6	53.7	21.1	3.80	0.99
Business Officer	36.4	50.0	4.5	9.1	0.0	1.86	0.89
Total Large District	17.7	34.7	15.0	24.5	8.2	2.71	1.25

15. Our procurement processes help me buy the products I already know I want even if from less established providers/brands

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small District							
Superintendent Technology	0.0	8.7	26.1	65.2	0.0	3.57	0.66
Director Curriculum	0.0	14.3	32.1	46.4	7.1	3.46	0.84
Director	4.5	27.3	13.6	50.0	4.5	3.23	1.07
Total Small District	1.4	16.4	24.7	53.4	4.1	3.42	0.87
Large District							
Superintendent Technology	10.0	10.0	40.0	40.0	0.0	3.10	0.97
Director Curriculum	3.2	6.5	35.5	48.4	6.5	3.48	0.85
Director	0.0	13.6	27.3	54.5	4.5	3.50	0.80
Total Large District	4.1	9.6	34.2	47.9	4.1	3.38	0.88

16. If procurement processes were more efficient (e.g., quicker, less demanding on districts and providers), product costs would decrease

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small District							
Superintendent Technology	0.0	26.1	26.1	43.5	4.3	3.26	0.92
Director Business	0.0	35.7	25.0	28.6	10.7	3.14	1.04
Officer	5.0	10.0	25.0	40.0	20.0	3.60	1.10
Total Small District	1.4	25.4	25.4	36.6	11.3	3.31	1.02
Large District							
Superintendent Technology	0.0	20.0	25.0	50.0	5.0	3.40	0.88
Director Business	6.5	19.4	32.3	32.3	9.7	3.19	1.08
Officer	4.5	22.7	27.3	36.4	9.1	3.23	1.07
Total Large District	4.1	20.5	28.8	38.4	8.2	3.26	1.01

17. Data privacy and security needs make procurement processes more difficult for ed-tech products than for other products

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	4.3	13.0	30.4	52.2	0.0	3.30	0.88
Technology Director	0.0	32.1	35.7	28.6	3.6	3.04	0.88
Total Small District	2.0	23.5	33.3	39.2	2.0	3.16	0.88
Large District							
Superintendent	5.0	15.0	30.0	35.0	15.0	3.40	1.10
Technology Director	0.0	29.0	29.0	25.8	16.1	3.29	1.07
Total Large District	2.0	23.5	29.4	29.4	15.7	3.33	1.07

I feel secure in my role to pursue the products that appear most effective even if from less established providers/brands

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small District							
Principal	7.8	11.8	29.4	33.3	17.6	3.41	1.15
Total Small District	7.8	11.8	29.4	33.3	17.6	3.41	1.15
Large District							
Principal	3.8	19.2	23.1	44.2	9.6	3.37	1.03
Total Large District	3.8	19.2	23.1	44.2	9.6	3.37	1.03

Rate the degree to which each of the following individuals or groups are involved in procurement processes for ed-tech products.

18. Parents

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small District							
Superintendent	43.5	30.4	26.1	0.0	0.0	1.83	0.83
Principal	49.0	23.5	21.6	5.9	0.0	1.84	0.97
Technology							
Director	50.0	32.1	14.3	3.6	0.0	1.71	0.85
Curriculum							
Director	40.0	45.0	15.0	0.0	0.0	1.75	0.72
Business							
Officer	44.4	27.8	22.2	5.6	0.0	1.89	0.96
Total Small							
District	46.4	30.0	20.0	3.6	0.0	1.81	0.88
Large District							
Superintendent	57.9	15.8	26.3	0.0	0.0	1.68	0.89
Principal	46.9	22.4	20.4	8.2	2.0	1.96	1.10
Technology							
Director	32.3	45.2	16.1	3.2	3.2	2.00	0.97
Curriculum							
Director	52.4	28.6	14.3	4.8	0.0	1.71	0.90
Business							
Officer	68.4	15.8	15.8	0.0	0.0	1.47	0.77
Total Large							
District	48.9	26.6	18.7	4.3	1.4	1.83	0.98

19. Students

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small District							
Superintendent	8.7	26.1	39.1	17.4	8.7	2.91	1.08
Principal	39.2	17.6	27.5	13.7	2.0	2.22	1.17
Technology							
Director	28.6	28.6	25.0	14.3	3.6	2.36	1.16
Curriculum							
Director	38.1	19.0	33.3	9.5	0.0	2.14	1.06
Business							
Officer	15.8	26.3	36.8	21.1	0.0	2.63	1.01
Total Small							
District	28.9	22.5	31.0	14.8	2.8	2.40	1.14
Large District							
Superintendent	42.1	15.8	31.6	10.5	0.0	2.11	1.10
Principal	44.0	20.0	18.0	12.0	6.0	2.16	1.29
Technology							
Director	9.7	32.3	41.9	12.9	3.2	2.68	0.95
Curriculum							
Director	52.4	23.8	14.3	9.5	0.0	1.81	1.03
Business							
Officer	52.4	19.0	23.8	4.8	0.0	1.81	0.98
Total Large							
District	38.7	22.5	25.4	10.6	2.8	2.16	1.14

20. Teachers

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	4.3	17.4	47.8	30.4	4.04 ^b	0.83	
Principal	9.8	9.8	31.4	29.4	19.6	3.39	1.20	
Technology								
Director	7.1	3.6	42.9	28.6	17.9	3.46	1.07	
Curriculum								
Director	4.5	9.1	36.4	31.8	18.2	3.50	1.06	
Business								
Officer	0.0	0.0	26.3	52.6	21.1	3.95 ^c	0.71	
Total Small								
District	5.6	6.3	31.5	35.7	21.0	3.60 ^a	1.06	
Large District								
Superintendent	10.0	10.0	40.0	30.0	10.0	3.20	1.11	
Principal	13.7	17.6	27.5	21.6	19.6	3.16	1.32	
Technology								
Director	0.0	3.2	35.5	32.3	29.0	3.87	0.89	
Curriculum								
Director	4.8	19.0	33.3	14.3	28.6	3.43	1.25	
Business								
Officer	4.5	18.2	45.5	27.3	4.5	3.09	0.92	
Total Large								
District	7.6	13.8	34.5	24.8	19.3	3.34	1.16	

^a Small Districts scored higher than Large Districts, $p = .05$.

^b Superintendents in Small Districts scored higher than Superintendents in Large Districts, $p = .01$.

^c Business Officers in Small Districts scored higher than those in Large Districts, $p < .01$.

21. Principals

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	0.0	13.0	52.2	34.8	4.22 ^b	0.67	
Principal	9.8	2.0	31.4	31.4	25.5	3.61	1.19	
Technology								
Director	7.1	3.6	21.4	39.3	28.6	3.79	1.13	
Curriculum								
Director	4.5	0.0	36.4	31.8	27.3	3.77	1.02	
Business								
Officer	0.0	0.0	10.5	57.9	31.6	4.21	0.63	
Total Small								
District	5.6	1.4	24.5	39.9	28.7	3.85 ^a	1.04	
Large District								
Superintendent	0.0	5.0	40.0	45.0	10.0	3.60	0.75	
Principal	3.8	15.4	38.5	19.2	23.1	3.42	1.13	
Technology								
Director	0.0	6.5	29.0	29.0	35.5	3.94	0.96	
Curriculum								
Director	0.0	4.8	42.9	23.8	28.6	3.76	0.94	
Business								
Officer	0.0	9.1	31.8	45.5	13.6	3.64	0.85	
Total Large								
District	1.4	9.6	36.3	29.5	23.3	3.64	0.99	

^a Small Districts scored higher than Large Districts, $p = .03$.

^b Superintendents in Small Districts scored higher than Superintendents in Large Districts, $p = .01$.

22. Chief Academic Officer (Curriculum Director or similar)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	0.0	9.1	36.4	54.5	4.45	0.67	
Principal	4.1	0.0	20.4	36.7	38.8	4.06	0.99	
Technology								
Director	3.6	3.6	14.3	25.0	53.6	4.21	1.07	
Curriculum								
Director	4.5	0.0	4.5	40.9	50.0	4.32	0.95	
Business								
Officer	0.0	0.0	5.3	31.6	63.2	4.58	0.61	
Total Small								
District	2.9	0.7	12.9	34.3	49.3	4.26	0.92	
Large District								
Superintendent	0.0	0.0	5.0	45.0	50.0	4.45	0.61	
Principal	0.0	5.9	17.6	47.1	29.4	4.00	0.85	
Technology								
Director	3.2	3.2	3.2	32.3	58.1	4.39	0.96	
Curriculum								
Director	0.0	4.5	13.6	36.4	45.5	4.23	0.87	
Business								
Officer	4.5	0.0	27.3	40.9	27.3	3.86	0.99	
Total Large								
District	1.4	3.4	13.7	41.1	40.4	4.16	0.88	

23. Chief Financial Officer

Stakeholder	Not at All %	%	Moderately %	%	Extensively %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	9.1	9.1	31.8	31.8	18.2	3.41	1.18
Principal	8.3	14.6	25.0	33.3	18.8	3.40	1.20
Technology							
Director	3.8	7.7	30.8	38.5	19.2	3.62	1.02
Curriculum							
Director	13.6	0.0	18.2	45.5	22.7	3.64	1.26
Business							
Officer	10.5	10.5	21.1	26.3	31.6	3.58	1.35
Total Small							
District	8.8	9.5	25.5	35.0	21.2	3.50	1.18
Large District							
Superintendent	0.0	20.0	25.0	25.0	30.0	3.65	1.14
Principal	2.0	7.8	19.6	49.0	21.6	3.80	0.94
Technology							
Director	6.5	12.9	32.3	19.4	29.0	3.52	1.24
Curriculum							
Director	9.5	14.3	28.6	23.8	23.8	3.38	1.28
Business							
Officer	18.2	4.5	40.9	31.8	4.5	3.00	1.16
Total Large							
District	6.2	11.0	27.6	33.1	22.1	3.54	1.14

24. Chief Information Officer

Stakeholder	Not at All %	%	Moderately %	%	Extensively %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	6.7	6.7	33.3	20.0	33.3	3.67	1.23
Principal Technology	12.1	15.2	27.3	24.2	21.2	3.27	1.31
Director Curriculum	4.2	0.0	8.3	12.5	75.0	4.54	0.98
Director Business	31.3	0.0	25.0	31.3	12.5	2.94	1.48
Officer	7.1	7.1	21.4	28.6	35.7	3.79	1.25
Total Small District	11.8	6.9	22.5	22.5	36.3	3.65	1.35
Large District							
Superintendent	0.0	15.8	15.8	21.1	47.4	4.00	1.16
Principal Technology	10.9	15.2	17.4	39.1	17.4	3.37	1.25
Director Curriculum	3.3	3.3	13.3	16.7	63.3	4.33	1.06
Director Business	5.6	16.7	33.3	22.2	22.2	3.39	1.20
Officer	0.0	11.1	33.3	5.6	50.0	3.94	1.16
Total Large District	5.3	12.2	20.6	24.4	37.4	3.76	1.23

25. Chief Purchasing Officer

Stakeholder	Not at All %	%	Moderately %	%	Extensively %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	12.5	6.3	37.5	12.5	31.3	3.44	1.37
Principal Technology	7.3	12.2	22.0	41.5	17.1	3.49	1.14
Director Curriculum	4.5	9.1	36.4	27.3	22.7	3.55	1.10
Director Business	25.0	0.0	25.0	31.3	18.8	3.19	1.47
Officer	5.3	5.3	21.1	26.3	42.1	3.95	1.18
Total Small District	9.6	7.9	27.2	30.7	24.6	3.53	1.22
Large District							
Superintendent	0.0	10.0	20.0	15.0	55.0	4.15	1.09
Principal Technology	2.1	4.2	25.0	43.8	25.0	3.85	0.92
Director Curriculum	6.7	6.7	26.7	13.3	46.7	3.87	1.28
Director Business	0.0	10.5	36.8	15.8	36.8	3.79	1.08
Officer	4.8	9.5	14.3	28.6	42.9	3.95	1.20
Total Large District	2.9	7.2	24.6	26.8	38.4	3.91 ^a	1.09

^a Large Districts scored higher than Small Districts, $p = .02$.

26. Technology Director

Stakeholder	Not at All %	%	Moderately %	%	Extensively %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	0.0	0.0	0.0	13.6	86.4	4.86	0.35
Principal	0.0	0.0	14.0	12.0	74.0	4.60	0.73
Technology Director	0.0	3.6	0.0	3.6	92.9	4.86	0.59
Curriculum Director	0.0	0.0	9.1	18.2	72.7	4.64	0.66
Business Officer	0.0	0.0	16.7	11.1	72.2	4.56	0.78
Total Small District	0.0	0.7	8.6	11.4	79.3	4.69	0.66
Large District							
Superintendent	0.0	0.0	0.0	15.0	85.0	4.85	0.37
Principal	0.0	1.9	1.9	28.8	67.3	4.62	0.63
Technology Director	0.0	0.0	6.5	9.7	83.9	4.77	0.56
Curriculum Director	0.0	0.0	4.5	31.8	63.6	4.59	0.59
Business Officer	0.0	0.0	4.5	22.7	72.7	4.68	0.57
Total Large District	0.0	0.7	3.4	22.4	73.5	4.69	0.57

27. School Board

Stakeholder	Not at All %	%	Moderately %	%	Extensively %	<i>M</i>	<i>SD</i>
Small District							
Superintendent	4.3	21.7	47.8	17.4	8.7	3.04	0.98
Principal	22.4	16.3	20.4	24.5	16.3	2.96	1.41
Technology							
Director	14.3	35.7	25.0	21.4	3.6	2.64	1.10
Curriculum							
Director	23.8	28.6	33.3	4.8	9.5	2.48	1.21
Business							
Officer	22.2	11.1	22.2	38.9	5.6	2.94	1.31
Total Small							
District	18.0	22.3	28.1	21.6	10.1	2.83	1.24
Large District							
Superintendent	10.0	35.0	45.0	10.0	0.0	2.55	0.83
Principal	0.0	25.0	34.6	17.3	23.1	3.38	1.11
Technology							
Director	14.3	28.6	28.6	17.9	10.7	2.82	1.22
Curriculum							
Director	9.5	28.6	38.1	23.8	0.0	2.76	0.94
Business							
Officer	23.8	42.9	19.0	9.5	4.8	2.29	1.10
Total Large							
District	9.2	30.3	33.1	16.2	11.3	2.90	1.13

28. Yourself (superintendent)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	4.3	17.4	30.4	47.8	4.22	0.90	
Principal	0.0	7.8	25.5	35.3	31.4	3.90	0.94	
Technology								
Director	0.0	10.7	28.6	21.4	39.3	3.89	1.07	
Curriculum								
Director	0.0	0.0	18.2	18.2	63.6	4.45	0.80	
Business								
Officer	0.0	0.0	21.1	31.6	47.4	4.26 ^b	0.81	
Total Small								
District	0.0	5.6	23.1	28.7	42.7	4.08 ^a	0.94	
Large District								
Superintendent	0.0	15.0	40.0	25.0	20.0	3.50	1.00	
Principal	2.0	14.0	14.0	32.0	38.0	3.90	1.13	
Technology								
Director	3.2	25.8	22.6	22.6	25.8	3.42	1.23	
Curriculum								
Director	0.0	14.3	42.9	14.3	28.6	3.57	1.08	
Business								
Officer	13.6	18.2	27.3	22.7	18.2	3.14	1.32	
Total Large								
District	3.5	17.4	25.7	25.0	28.5	3.58	1.17	

^a Small Districts scored higher than Large Districts, $p < .01$.

^b Business Officers in Small Districts scored higher than those in Large Districts, $p = .01$.

29. Other (please specify and rate)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	0.0	50.0	0.0	50.0	4.00	1.41	
Principal	0.0	50.0	0.0	0.0	50.0	3.50	2.12	
Technology								
Director	25.0	0.0	25.0	0.0	50.0	3.50	1.92	
Curriculum								
Director	0.0	0.0	0.0	100.0	0.0	4.00	0.00	
Business								
Officer	0.0	0.0	50.0	0.0	50.0	4.00	1.41	
Total Small								
District	8.3	8.3	25.0	16.7	41.7	3.75	1.36	
Large District								
Superintendent	0.0	0.0	66.7	33.3	0.0	3.33	0.58	
Principal	0.0	50.0	0.0	50.0	0.0	3.00	1.16	
Technology								
Director	12.5	0.0	12.5	50.0	25.0	3.75	1.28	
Business								
Officer	0.0	0.0	0.0	100.0	0.0	4.00	.	
Total Large								
District	6.3	12.5	18.8	50.0	12.5	3.50	1.10	

To what degree does the district rely on each of the following to identify, select, and acquire quality products?

30. A formal, competitive decision-making process (e.g., RFP)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	13.6	9.1	13.6	50.0	13.6	3.41	1.26	
Principal	2.0	17.6	37.3	29.4	13.7	3.35	1.00	
Technology								
Director	17.9	25.0	28.6	21.4	7.1	2.75	1.21	
Curriculum								
Director	0.0	22.7	31.8	22.7	22.7	3.45	1.10	
Business								
Officer	0.0	5.0	40.0	40.0	15.0	3.65	0.81	
Total Small								
District	6.3	16.8	31.5	31.5	14.0	3.30	1.10	
Large District								
Superintendent	0.0	0.0	15.0	40.0	45.0	4.30	0.73	
Principal	2.0	3.9	35.3	45.1	13.7	3.65	0.84	
Technology								
Director	3.2	3.2	25.8	41.9	25.8	3.84 ^b	0.97	
Curriculum								
Director	4.5	4.5	27.3	31.8	31.8	3.82	1.10	
Business								
Officer	9.1	4.5	22.7	40.9	22.7	3.64	1.18	
Total Large								
District	3.4	3.4	27.4	41.1	24.7	3.80 ^a	0.97	

^a Large Districts scored higher than Small Districts, $p < .01$.

^b Technology Directors in Large Districts scored higher than those in Small Districts, $p < .01$.

31. A noncompetitive procurement process (sole source or other)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	18.2	31.8	40.9	9.1	3.41	0.91	
Principal	17.6	17.6	33.3	25.5	5.9	2.84	1.17	
Technology								
Director	10.7	10.7	35.7	28.6	14.3	3.25	1.18	
Curriculum								
Director	0.0	9.1	45.5	36.4	9.1	3.45	0.80	
Business								
Officer	15.0	10.0	20.0	45.0	10.0	3.25	1.25	
Total Small								
District	10.5	14.0	33.6	32.9	9.1	3.16	1.11	
Large District								
Superintendent	0.0	20.0	60.0	20.0	0.0	3.00	0.65	
Principal	14.0	14.0	30.0	36.0	6.0	3.06	1.15	
Technology								
Director	0.0	22.6	41.9	22.6	12.9	3.26	0.97	
Curriculum								
Director	4.5	18.2	18.2	36.4	22.7	3.55	1.18	
Business								
Officer	0.0	31.8	27.3	27.3	13.6	3.23	1.07	
Total Large								
District	5.5	20.0	34.5	29.7	10.3	3.19	1.05	

32. A cooperative purchasing process with other districts

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	9.1	22.7	36.4	31.8	0.0	2.91	0.97	
Business Officer	5.0	25.0	5.0	40.0	25.0	3.55	1.28	
Total Small District	7.1	23.8	21.4	35.7	11.9	3.21	1.16	
Large District								
Superintendent	20.0	25.0	5.0	40.0	10.0	2.95	1.40	
Business Officer	18.2	18.2	31.8	18.2	13.6	2.91	1.31	
Total Large District	19.0	21.4	19.0	28.6	11.9	2.93	1.33	

33. Rigorous evaluation evidence (from published studies, literature reviews, etc.)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	4.5	45.5	36.4	13.6	3.59	0.80	
Principal Technology Director	3.9	19.6	27.5	37.3	11.8	3.33	1.05	
Curriculum Director	0.0	14.3	35.7	42.9	7.1	3.43	0.84	
Business Officer	4.5	9.1	45.5	31.8	9.1	3.32	0.95	
Total Small District	5.0	20.0	35.0	40.0	0.0	3.10	0.91	
District	2.8	14.7	35.7	37.8	9.1	3.36	0.94	
Large District								
Superintendent	5.0	15.0	20.0	35.0	25.0	3.60	1.19	
Principal Technology Director	1.9	11.5	21.2	53.8	11.5	3.62	0.91	
Curriculum Director	3.2	25.8	35.5	32.3	3.2	3.06	0.93	
Business Officer	0.0	14.3	38.1	28.6	19.0	3.52	0.98	
Total Large District	9.1	22.7	36.4	22.7	9.1	3.00	1.11	
District	3.4	17.1	28.8	38.4	12.3	3.39	1.02	

34. Non-rigorous evaluation evidence (e.g., from providers' in-house studies)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	4.5	18.2	54.5	18.2	4.5	3.00	0.87	
Principal	7.8	25.5	35.3	23.5	7.8	2.98	1.07	
Technology								
Director	3.6	21.4	42.9	32.1	0.0	3.04	0.84	
Curriculum								
Director	0.0	27.3	36.4	27.3	9.1	3.18	0.96	
Business								
Officer	20.0	20.0	45.0	15.0	0.0	2.55	1.00	
Total Small								
District	7.0	23.1	41.3	23.8	4.9	2.97	0.97	
Large District								
Superintendent	5.0	35.0	40.0	10.0	10.0	2.85	1.04	
Principal	13.5	13.5	46.2	23.1	3.8	2.90	1.03	
Technology								
Director	6.5	32.3	35.5	22.6	3.2	2.84	0.97	
Curriculum								
Director	0.0	31.8	63.6	4.5	0.0	2.73	0.55	
Business								
Officer	9.1	27.3	50.0	9.1	4.5	2.73	0.94	
Total Large								
District	8.2	25.2	46.3	16.3	4.1	2.83	0.94	

35. Recommendations from sales representatives

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	4.5	27.3	54.5	9.1	4.5	2.82	0.85	
Principal	5.9	25.5	52.9	11.8	3.9	2.82	0.87	
Technology								
Director	3.6	39.3	35.7	14.3	7.1	2.82	0.98	
Curriculum								
Director	0.0	31.8	40.9	18.2	9.1	3.05	0.95	
Business								
Officer	5.0	45.0	30.0	20.0	0.0	2.65	0.88	
Total Small								
District	4.2	32.2	44.8	14.0	4.9	2.83	0.90	
Large District								
Superintendent	15.0	45.0	25.0	15.0	0.0	2.40	0.94	
Principal	3.8	13.5	61.5	17.3	3.8	3.04	0.79	
Technology								
Director	9.7	41.9	29.0	12.9	6.5	2.65	1.05	
Curriculum								
Director	4.5	31.8	50.0	9.1	4.5	2.77	0.87	
Business								
Officer	9.1	31.8	45.5	9.1	4.5	2.68	0.95	
Total Large								
District	7.5	29.3	45.6	13.6	4.1	2.78	0.92	

36. Recommendations from end-users (principals or teachers)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	0.0	14.3	57.1	28.6	4.14	0.66	
Principal	5.9	3.9	33.3	37.3	19.6	3.61	1.04	
Technology								
Director	3.6	3.6	35.7	57.1	0.0	3.46	0.74	
Curriculum								
Director	9.1	4.5	13.6	36.4	36.4	3.86	1.25	
Business								
Officer	0.0	0.0	25.0	55.0	20.0	3.95	0.69	
Total Small								
District	4.2	2.8	26.8	46.5	19.7	3.75 ^a	0.95	
Large District								
Superintendent	0.0	0.0	20.0	55.0	25.0	4.05	0.69	
Principal	3.8	11.5	36.5	36.5	11.5	3.40	0.98	
Technology								
Director	3.2	6.5	32.3	48.4	9.7	3.55	0.89	
Curriculum								
Director	0.0	0.0	40.9	54.5	4.5	3.64	0.58	
Business								
Officer	0.0	13.6	36.4	40.9	9.1	3.45	0.86	
Total Large								
District	2.0	7.5	34.0	44.9	11.6	3.56	0.87	

^a Small Districts scored higher than Large Districts, $p = .04$.

37. Recommendations from other districts or consultants

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	0.0	22.7	59.1	18.2	3.95	0.65	
Principal	2.0	5.9	35.3	41.2	15.7	3.63	0.89	
Technology								
Director	0.0	0.0	28.6	60.7	10.7	3.82	0.61	
Curriculum								
Director	9.1	4.5	22.7	36.4	27.3	3.68	1.21	
Business								
Officer	0.0	5.0	35.0	35.0	25.0	3.80	0.89	
Total Small								
District	2.1	3.5	30.1	46.2	18.2	3.75	0.87	
Large District								
Superintendent	0.0	0.0	25.0	45.0	30.0	4.05	0.76	
Principal	2.0	9.8	41.2	35.3	11.8	3.45	0.90	
Technology								
Director	3.2	0.0	32.3	45.2	19.4	3.77	0.88	
Curriculum								
Director	0.0	10.0	40.0	35.0	15.0	3.55	0.89	
Business								
Officer	0.0	9.1	54.5	31.8	4.5	3.32	0.72	
Total Large								
District	1.4	6.3	38.9	38.2	15.3	3.60	0.87	

38. Choosing from a list of “approved” (or recognized) providers/brands

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	9.1	9.1	27.3	50.0	4.5	3.32	1.04	
Principal	7.8	15.7	41.2	31.4	3.9	3.08	0.98	
Technology								
Director	14.3	25.0	35.7	21.4	3.6	2.75	1.08	
Curriculum								
Director	4.5	22.7	31.8	31.8	9.1	3.18	1.05	
Business								
Officer	5.0	5.0	30.0	50.0	10.0	3.55	0.95	
Total Small								
District	8.4	16.1	35.0	35.0	5.6	3.13	1.03	
Large District								
Superintendent	0.0	10.5	42.1	47.4	0.0	3.37	0.68	
Principal	1.9	3.8	28.8	53.8	11.5	3.69 ^c	0.81	
Technology								
Director	0.0	12.9	19.4	54.8	12.9	3.68 ^b	0.87	
Curriculum								
Director	4.5	22.7	22.7	45.5	4.5	3.23	1.02	
Business								
Officer	9.1	13.6	40.9	31.8	4.5	3.09	1.02	
Total Large								
District	2.7	11.0	29.5	48.6	8.2	3.49 ^a	0.90	

^a Large Districts scored higher than Small Districts, $p < .01$.

^b Technology Directors in Large Districts scored higher than those in Small Districts, $p < .01$.

^c Principals in Large Districts scored higher than Principals in Small Districts, $p < .01$.

39. Recommendations or ratings on an informational website (please specify which):

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	23.8	19.0	28.6	23.8	4.8	2.67	1.24	
Principal	30.2	18.6	34.9	16.3	0.0	2.37	1.09	
Technology								
Director	23.1	26.9	38.5	11.5	0.0	2.38	0.98	
Curriculum								
Director	23.8	28.6	33.3	9.5	4.8	2.43	1.12	
Business								
Officer	29.4	29.4	23.5	11.8	5.9	2.35	1.22	
Total Small								
District	26.6	23.4	32.8	14.8	2.3	2.43	1.11	
Large District								
Superintendent	27.8	27.8	27.8	16.7	0.0	2.33	1.09	
Principal	22.2	26.7	31.1	17.8	2.2	2.51	1.10	
Technology								
Director	9.7	25.8	45.2	19.4	0.0	2.74	0.89	
Curriculum								
Director	23.8	19.0	42.9	4.8	9.5	2.57	1.21	
Business								
Officer	38.1	23.8	33.3	4.8	0.0	2.05	0.97	
Total Large								
District	22.8	25.0	36.0	14.0	2.2	2.48	1.06	

40. Pilot tryouts of products within the district

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	0.0	9.1	36.4	54.5	4.45	0.67	
Principal	2.0	5.9	23.5	45.1	23.5	3.82 ^a	0.93	
Technology								
Director	0.0	7.1	50.0	28.6	14.3	3.50	0.84	
Curriculum								
Director	0.0	9.1	27.3	18.2	45.5	4.00	1.07	
Business								
Officer	5.0	15.0	35.0	25.0	20.0	3.40	1.14	
Total Small								
District	1.4	7.0	28.7	33.6	29.4	3.83	0.98	
Large District								
Superintendent	0.0	0.0	30.0	50.0	20.0	3.90	0.72	
Principal	3.8	1.9	34.6	40.4	19.2	3.69	0.94	
Technology								
Director	0.0	9.7	25.8	32.3	32.3	3.87 ^b	0.99	
Curriculum								
Director	0.0	4.5	40.9	31.8	22.7	3.73	0.88	
Business								
Officer	4.5	13.6	27.3	50.0	4.5	3.36	0.95	
Total Large								
District	2.0	5.4	32.0	40.1	20.4	3.71	0.92	

^a Principals in Small Districts scored higher than Principals in Large Districts, $p = .42$.

^b Technology Directors in Large Districts scored higher than those in Small Districts, $p = .11$.

41. Products with the lowest cost

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small District								
Superintendent	0.0	13.6	40.9	40.9	4.5	3.36	0.79	
Business								
Officer	5.0	30.0	45.0	15.0	5.0	2.85	0.93	
Total Small								
District	2.4	21.4	42.9	28.6	4.8	3.12	0.89	
Large District								
Superintendent	0.0	20.0	50.0	20.0	10.0	3.20	0.89	
Business								
Officer	13.6	31.8	31.8	22.7	0.0	2.64	1.00	
Total Large								
District	7.1	26.2	40.5	21.4	4.8	2.90	0.98	

42. “Bundled” products (both software and hardware together)

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small District							
Superintendent	4.5	13.6	27.3	45.5	9.1	3.41	1.01
Technology							
Director	14.3	32.1	39.3	14.3	0.0	2.54	0.92
Business							
Officer	0.0	31.6	47.4	5.3	15.8	3.05	1.03
Total Small							
District	7.2	26.1	37.7	21.7	7.2	2.96	1.04
Large District							
Superintendent	10.0	30.0	30.0	30.0	0.0	2.80	1.01
Technology							
Director	12.9	22.6	51.6	12.9	0.0	2.65	0.88
Business							
Officer	18.2	9.1	31.8	40.9	0.0	2.95	1.13
Total Large							
District	13.7	20.5	39.7	26.0	0.0	2.78	0.99

43. Other (please specify and rate):

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small District							
Superintendent	71.4	0.0	14.3	14.3	0.0	1.71	1.25
Principal	81.3	0.0	12.5	6.3	0.0	1.44	0.96
Technology							
Director	53.8	0.0	15.4	7.7	23.1	2.46	1.76
Curriculum							
Director	70.0	10.0	10.0	0.0	10.0	1.70	1.34
Business							
Officer	71.4	14.3	0.0	0.0	14.3	1.71	1.50
Total Small							
District	69.8	3.8	11.3	5.7	9.4	1.81	1.37
Large District							
Superintendent	50.0	0.0	0.0	25.0	25.0	2.75	2.06
Principal	80.0	0.0	5.0	10.0	5.0	1.60	1.27
Technology							
Director	50.0	16.7	8.3	8.3	16.7	2.25	1.60
Curriculum							
Director	100.0	0.0	0.0	0.0	0.0	1.00	0.00
Business							
Officer	75.0	12.5	0.0	12.5	0.0	1.50	1.07
Total Large							
District	70.8	6.3	4.2	10.4	8.3	1.79	1.38

Your recommendations

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small District							
Technology							
Director	7.1	0.0	10.7	67.9	14.3	3.82	0.95
Curriculum							
Director	10.0	15.0	30.0	35.0	10.0	3.20	1.15
Total Small							
District	8.3	6.3	18.8	54.2	12.5	3.56	1.07
Large District							
Technology							
Director	0.0	3.2	35.5	45.2	16.1	3.74	0.77
Curriculum							
Director	0.0	23.8	47.6	28.6	0.0	3.05	0.74
Total Large							
District	0.0	11.5	40.4	38.5	9.6	3.46	0.83

To what degree might the following tools and guidelines be helpful to your district in identifying, evaluating, and/or acquiring effective ed-tech products?

44. Standard evaluation rubrics for judging the quality of products

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small District								
Superintendent	0.0	0.0	26.1	52.2	21.7	3.96	0.71	
Principal	2.0	9.8	29.4	31.4	27.5	3.73	1.04	
Technology								
Director	7.1	10.7	28.6	35.7	17.9	3.46	1.14	
Curriculum								
Director	0.0	0.0	40.9	36.4	22.7	3.82	0.80	
Business								
Officer	0.0	5.0	45.0	45.0	5.0	3.50	0.69	
Total Small								
District	2.1	6.3	32.6	38.2	20.8	3.69	0.94	
Large District								
Superintendent	0.0	10.0	10.0	50.0	30.0	4.00	0.92	
Principal	0.0	3.8	28.8	50.0	17.3	3.81	0.77	
Technology								
Director	3.3	0.0	33.3	33.3	30.0	3.87	0.97	
Curriculum								
Director	0.0	4.5	27.3	22.7	45.5	4.09	0.97	
Business								
Officer	0.0	4.5	22.7	50.0	22.7	3.91	0.81	
Total Large								
District	0.7	4.1	26.0	42.5	26.7	3.90	0.87	

45. Guidelines for conducting effective pilot studies to determine how well a product works

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small District								
Superintendent	0.0	4.3	17.4	56.5	21.7	3.96	0.77	
Principal	0.0	9.8	21.6	33.3	35.3	3.94	0.99	
Technology								
Director	0.0	7.1	32.1	39.3	21.4	3.75	0.89	
Curriculum								
Director	4.5	0.0	36.4	31.8	27.3	3.77	1.02	
Business								
Officer	0.0	10.0	30.0	50.0	10.0	3.60	0.82	
Total Small								
District	0.7	6.9	26.4	40.3	25.7	3.83	0.92	
Large District								
Superintendent	0.0	20.0	10.0	35.0	35.0	3.85	1.14	
Principal	0.0	0.0	17.3	48.1	34.6	4.17	0.71	
Technology								
Director	0.0	0.0	35.5	22.6	41.9	4.06	0.89	
Curriculum								
Director	0.0	0.0	36.4	31.8	31.8	3.95	0.84	
Business								
Officer	0.0	4.5	27.3	50.0	18.2	3.82	0.80	
Total Large								
District	0.0	3.4	24.5	38.8	33.3	4.02	0.85	

46. Brief case studies or descriptions of “best practices” for ed-tech procurement by school districts

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small District								
Superintendent	0.0	4.3	21.7	39.1	34.8	4.04	0.88	
Principal	0.0	13.7	23.5	37.3	25.5	3.75	1.00	
Technology								
Director	0.0	10.7	35.7	35.7	17.9	3.61	0.92	
Curriculum								
Director	4.5	4.5	27.3	40.9	22.7	3.73	1.03	
Business								
Officer	0.0	15.0	30.0	40.0	15.0	3.55	0.95	
Total Small								
District	0.7	10.4	27.1	38.2	23.6	3.74	0.96	
Large District								
Superintendent	0.0	10.0	25.0	25.0	40.0	3.95	1.05	
Principal	1.9	5.8	25.0	38.5	28.8	3.87	0.97	
Technology								
Director	0.0	3.2	41.9	32.3	22.6	3.74	0.86	
Curriculum								
Director	0.0	9.1	27.3	40.9	22.7	3.77	0.92	
Business								
Officer	0.0	0.0	36.4	54.5	9.1	3.73	0.63	
Total Large								
District	0.7	5.4	30.6	38.1	25.2	3.82	0.90	

47. Guidelines for best practices by individual district stakeholder groups (administration, businesses, end-users, etc.)

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small District								
Superintendent	0.0	0.0	13.0	56.5	30.4	4.17	0.65	
Principal	2.0	3.9	31.4	27.5	35.3	3.90	1.01	
Technology Director	0.0	14.3	35.7	39.3	10.7	3.46	0.88	
Curriculum Director	4.5	0.0	31.8	50.0	13.6	3.68	0.89	
Business Officer	0.0	10.0	25.0	45.0	20.0	3.75	0.91	
Total Small District	1.4	5.6	28.5	40.3	24.3	3.81	0.92	
Large District								
Superintendent	0.0	10.0	10.0	35.0	45.0	4.15	0.99	
Principal	0.0	5.8	28.8	40.4	25.0	3.85	0.87	
Technology Director	0.0	3.2	32.3	41.9	22.6	3.84	0.82	
Curriculum Director	0.0	0.0	36.4	36.4	27.3	3.91	0.81	
Business Officer	0.0	0.0	50.0	45.5	4.5	3.55	0.60	
Total Large District	0.0	4.1	31.3	40.1	24.5	3.85	0.84	

48. Guidelines for best practices for providers to use in working with school districts

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small District								
Superintendent	0.0	0.0	26.1	47.8	26.1	4.00	0.74	
Principal	3.9	9.8	33.3	29.4	23.5	3.59	1.08	
Technology Director	0.0	14.3	42.9	32.1	10.7	3.39	0.88	
Curriculum Director	0.0	13.6	31.8	36.4	18.2	3.59	0.96	
Business Officer	0.0	10.0	20.0	55.0	15.0	3.75	0.85	
Total Small District	1.4	9.7	31.9	37.5	19.4	3.64	0.95	
Large District								
Superintendent	0.0	20.0	20.0	35.0	25.0	3.65	1.09	
Principal	0.0	1.9	32.7	46.2	19.2	3.83	0.76	
Technology Director	0.0	6.5	38.7	32.3	22.6	3.71	0.90	
Curriculum Director	0.0	4.5	45.5	22.7	27.3	3.73	0.94	
Business Officer	0.0	0.0	27.3	63.6	9.1	3.82	0.59	
Total Large District	0.0	5.4	33.3	40.8	20.4	3.76	0.84	

49. A national website for providers and school districts, which provides information on procurement practices, product availability, and evidence

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small District								
Superintendent	0.0	4.3	30.4	47.8	17.4	3.78	0.80	
Principal	3.9	17.6	37.3	19.6	21.6	3.37	1.13	
Technology Director	0.0	17.9	35.7	28.6	17.9	3.46	1.00	
Curriculum Director	9.1	4.5	63.6	13.6	9.1	3.09	0.97	
Business Officer	0.0	10.0	20.0	55.0	15.0	3.75	0.85	
Total Small District	2.8	12.5	37.5	29.9	17.4	3.47	1.01	
Large District								
Superintendent	0.0	15.0	20.0	30.0	35.0	3.85	1.09	
Principal	3.8	5.8	44.2	28.8	17.3	3.50	0.98	
Technology Director	0.0	19.4	25.8	35.5	19.4	3.55	1.03	
Curriculum Director	0.0	4.5	31.8	45.5	18.2	3.77	0.81	
Business Officer	0.0	4.5	18.2	59.1	18.2	3.91	0.75	
Total Large District	1.4	9.5	31.3	37.4	20.4	3.66	0.95	

50. Standard contract language developed by a respected third party

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small District								
Superintendent Technology	0.0	13.0	26.1	43.5	17.4	3.65	0.94	
Director Curriculum	3.6	21.4	42.9	17.9	14.3	3.18	1.06	
Director Business	4.5	22.7	45.5	22.7	4.5	3.00	0.93	
Officer	0.0	0.0	40.0	35.0	25.0	3.85	0.81	
Total Small District	2.2	15.1	38.7	29.0	15.1	3.40	0.99	
Large District								
Superintendent Technology	5.0	10.0	20.0	40.0	25.0	3.70	1.13	
Director Curriculum	3.2	6.5	41.9	29.0	19.4	3.55	1.00	
Director Business	4.5	18.2	40.9	22.7	13.6	3.23	1.07	
Officer	0.0	13.6	22.7	45.5	18.2	3.68	0.95	
Total Large District	3.2	11.6	32.6	33.7	18.9	3.54	1.03	

51. Other (please specify and rate):

By District (please specify and rate):								
Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small District								
Superintendent	83.3	0.0	16.7	0.0	0.0	1.33	0.82	
Principal	62.5	18.8	12.5	6.3	0.0	1.63	0.96	
Technology								
Director	90.0	0.0	10.0	0.0	0.0	1.20	0.63	
Curriculum								
Director	66.7	0.0	22.2	11.1	0.0	1.78	1.20	
Business								
Officer	62.5	12.5	12.5	0.0	12.5	1.88	1.46	
Total Small								
District	71.4	8.2	14.3	4.1	2.0	1.57	1.02	
Large District								
Superintendent	50.0	25.0	0.0	25.0	0.0	2.00	1.41	
Principal	75.0	0.0	5.0	10.0	10.0	1.80	1.47	
Technology								
Director	50.0	0.0	21.4	14.3	14.3	2.43	1.60	
Curriculum								
Director	100.0	0.0	0.0	0.0	0.0	1.00	0.00	
Business								
Officer	75.0	0.0	12.5	12.5	0.0	1.63	1.19	
Total Large								
District	67.3	2.0	10.2	12.2	8.2	1.92	1.43	

Appendix H: Descriptive Statistics and Response Frequencies for Provider Size Comparison

Indicate your degree of satisfaction with each of the following aspects of procuring ed-tech products:

1. The district's processes for identifying, evaluating, and acquiring needed ed-tech products

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	15.4	57.7	23.1	3.8	0.0	2.15	0.73
Large Provider	28.6	28.6	33.3	9.5	0.0	2.24	1.00

5. The involvement by end-users (e.g., principals and teachers) in the selection and acquisition of products.

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	7.7	30.8	30.8	30.8	0.0	2.85	0.97
Large Provider	0.0	28.6	38.1	28.6	4.8	3.10	0.89

8. The time required to complete procurement processes and bring products to end-users

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	26.9	46.2	7.7	19.2	0.0	2.19	1.06
Large Provider	19.0	52.4	9.5	19.0	0.0	2.29	1.01

10. State or municipal laws that govern procurement processes

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	19.2	34.6	46.2	0.0	0.0	2.27	0.78
Large Provider	33.3	14.3	23.8	23.8	4.8	2.52	1.33

11. The involvement of the school board in procurement processes

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	7.7	23.1	65.4	3.8	0.0	2.65	0.69
Large Provider	4.8	28.6	52.4	14.3	0.0	2.76	0.77

Gaining acceptance or visibility in a district

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	15.4	46.2	19.2	15.4	3.8	2.46	1.07
Large Provider	4.8	42.9	23.8	23.8	4.8	2.81	1.03

Information provided by the district regarding buying cycles and purchasing policies

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	23.1	53.8	15.4	7.7	0.0	2.08	0.85
Large Provider	23.8	23.8	38.1	14.3	0.0	2.43	1.03

Districts' openness to contracting with for-profit providers

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	3.8	15.4	42.3	34.6	3.8	3.19	0.90
Large Provider	0.0	19.0	38.1	33.3	9.5	3.33	0.91

Provider access to district decision makers regarding the procurement process

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	3.8	57.7	34.6	3.8	0.0	2.38	0.64
Large Provider	4.8	52.4	33.3	9.5	0.0	2.48	0.75

Opportunities for conducting pilots in district schools

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	7.7	26.9	23.1	34.6	7.7	3.08	1.13
Large Provider	0.0	33.3	28.6	38.1	0.0	3.05	0.87

Opportunities to expand from pilots to a broader implementation (without a complicated procurement process or RFP)

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	15.4	26.9	42.3	11.5	3.8	2.62	1.02
Large Provider	9.5	38.1	19.0	33.3	0.0	2.76	1.04

Your understanding of districts' instructional needs and preferred pedagogies

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	3.8	23.1	26.9	46.2	0.0	3.15	0.93
Large Provider	4.8	14.3	42.9	23.8	14.3	3.29	1.06

Districts' demands for evidence regarding product effectiveness

Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Small Provider	3.8	11.5	50.0	34.6	0.0	3.15	0.78
Large Provider	4.8	23.8	38.1	33.3	0.0	3.00	0.89

Indicate your level of agreement or disagreement with each of the following statements.

12. District procurement processes meet contemporary needs for product acquisitions

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small Provider	44.0	40.0	16.0	0.0	0.0	1.72	0.74
Large Provider	23.8	47.6	19.0	9.5	0.0	2.14	0.91

13. De-centralized school procurement processes (significant school autonomy) are desirable for acquiring needed ed-tech products

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small Provider	15.4	23.1	23.1	34.6	3.8	2.88	1.18
Large Provider	28.6	28.6	23.8	19.0	0.0	2.33	1.11

16. If procurement processes were more efficient (e.g., quicker, less demanding on districts and providers), product costs would decrease

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small Provider	0.0	0.0	30.8	23.1	46.2	4.15 ^a	0.88
Large Provider	0.0	33.3	19.0	38.1	9.5	3.24	1.04

^a Small Providers scored higher than Large Providers.

Using standardized RFPs and contract documents that reflect best practices nationally would be desirable in improving procurement processes

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small Provider	15.4	7.7	23.1	46.2	7.7	3.23	1.21
Large Provider	4.8	19.0	19.0	47.6	9.5	3.38	1.07

The development of our products is directly informed by research evidence and educational outcomes

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small Provider	0.0	0.0	11.5	26.9	61.5	4.50	0.71
Large Provider	0.0	9.5	0.0	38.1	52.4	4.33	0.91

The development of our products is influenced directly by expected requirements for selling them to districts (i.e., typical district procurement processes)

Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Small Provider	3.8	19.2	19.2	38.5	19.2	3.50	1.14
Large Provider	9.5	14.3	9.5	38.1	28.6	3.62	1.32

Rate the degree to which each of the following individuals or groups are involved in procurement processes for ed-tech products.

18. Parents

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small Provider	57.1	19.0	19.0	0.0	4.8		1.76	1.09
Large Provider	58.8	35.3	5.9	0.0	0.0		1.47	0.62

19. Students

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small Provider	58.3	12.5	16.7	8.3	4.2		1.88	1.23
Large Provider	47.1	35.3	17.6	0.0	0.0		1.71	0.77

20. Teachers

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small Provider	7.7	15.4	26.9	38.5	11.5		3.31	1.12
Large Provider	5.0	15.0	60.0	10.0	10.0		3.05	0.95

21. Principals

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small Provider	0.0	0.0	26.9	46.2	26.9		4.00 ^a	0.75
Large Provider	5.0	10.0	50.0	20.0	15.0		3.30	1.03

^a Small Providers scored higher than Large Providers, $p = .01$

22. Chief Academic Officer (Curriculum Director or similar)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Small Provider	0.0	3.8	3.8	30.8	61.5		4.50	0.76
Large Provider	0.0	0.0	9.5	38.1	52.4		4.43	0.68

23. Chief Financial Officer

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	16.7	25.0	41.7	8.3	8.3	2.67	1.13
Large Provider	10.0	30.0	40.0	15.0	5.0	2.75	1.02

24. Chief Information Officer

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	16.0	20.0	36.0	16.0	12.0	2.88	1.24
Large Provider	9.5	9.5	42.9	23.8	14.3	3.24	1.14

25. Chief Purchasing Officer

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	13.6	13.6	36.4	18.2	18.2	3.14	1.28
Large Provider	10.5	31.6	15.8	26.3	15.8	3.05	1.31

26. Technology Director

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	0.0	12.5	37.5	20.8	29.2	3.67	1.05
Large Provider	5.0	5.0	25.0	40.0	25.0	3.75	1.07

27. School Board

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	32.0	24.0	44.0	0.0	0.0	2.12	0.88
Large Provider	10.0	40.0	40.0	5.0	5.0	2.55	0.95

29. Yourself (Superintendent)

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	7.7	15.4	23.1	30.8	23.1	3.46	1.24
Large Provider	10.0	10.0	35.0	25.0	20.0	3.35	1.23

29. Other (please specify and rate)

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	20.0	20.0	20.0	0.0	40.0	3.20	1.79
Large Provider	0.0	0.0	12.5	37.5	50.0	4.38	0.74

To what degree does the district rely on each of the following to identify, select, and acquire quality products?

30. A formal, competitive decision-making process (e.g., RFP)

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	11.5	15.4	26.9	30.8	15.4	3.23	1.24
Large Provider	0.0	14.3	33.3	33.3	19.0	3.57	0.98

31. A noncompetitive procurement process (sole source or other)

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	0.0	23.1	30.8	34.6	11.5	3.35	0.98
Large Provider	4.8	19.0	28.6	33.3	14.3	3.33	1.11

32. A cooperative purchasing process with other districts

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	28.0	20.0	36.0	16.0	0.0	2.40	1.08
Large Provider	14.3	33.3	28.6	23.8	0.0	2.62	1.02

33. Rigorous evaluation evidence (from published studies, literature reviews, etc.)

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	3.8	23.1	30.8	30.8	11.5	3.23	1.07
Large Provider	9.5	28.6	28.6	28.6	4.8	2.90	1.09

34. Non-rigorous evaluation evidence (e.g., from providers' in-house studies)

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	3.8	11.5	26.9	34.6	23.1	3.62	1.10
Large Provider	0.0	14.3	14.3	52.4	19.0	3.76	0.94

35. Recommendations from sales representatives

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	7.7	26.9	42.3	19.2	3.8	2.85	0.97
Large Provider	9.5	4.8	47.6	28.6	9.5	3.24	1.04

36. Recommendations from end-users (principals or teachers)

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	0.0	0.0	7.7	65.4	26.9		4.19 ^a	0.57
Large Provider	4.8	9.5	23.8	42.9	19.0		3.62	1.07

^a Small Providers scored higher than Large Providers, $p = .05$

37. Recommendations from other districts or consultants

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	0.0	3.8	15.4	42.3	38.5		4.15	0.83
Large Provider	0.0	4.8	14.3	47.6	33.3		4.10	0.83

38. Choosing from a list of “approved” (or recognized) providers/brands

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	11.5	19.2	34.6	34.6	0.0		2.92	1.02
Large Provider	9.5	23.8	19.0	33.3	14.3		3.19	1.25

39. Recommendations or ratings on an informational website (please specify which):

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	44.0	16.0	36.0	0.0	4.0		2.04	1.10
Large Provider	36.8	26.3	21.1	10.5	5.3		2.21	1.23

40. Pilot tryouts of products within the district

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	3.8	15.4	34.6	30.8	15.4		3.38	1.06
Large Provider	0.0	23.8	38.1	28.6	9.5		3.24	0.94

41. Products with the lowest cost

Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	7.7	19.2	30.8	34.6	7.7		3.15	1.08
Large Provider	0.0	28.6	23.8	38.1	9.5		3.29	1.01

42. “Bundled” products (both software and hardware together)

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	26.9	23.1	42.3	7.7	0.0	2.31	0.97
Large Provider	35.0	25.0	20.0	20.0	0.0	2.25	1.16

43. Other (please specify and rate):

Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Small Provider	68.8	6.3	12.5	6.3	6.3	1.75	1.29
Large Provider	58.3	0.0	0.0	16.7	25.0	2.50	1.88

To what degree might the following tools and guidelines be helpful to your district in identifying, evaluating, and/or acquiring effective ed-tech products?

44. Standard evaluation rubrics for judging the quality of products

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	3.8	15.4	23.1	30.8	26.9		3.62	1.17
Large Provider	4.8	4.8	47.6	19.0	23.8		3.52	1.08

45. Guidelines for conducting effective pilot studies to determine how well a product works

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	0.0	0.0	23.1	38.5	38.5		4.15	0.78
Large Provider	0.0	19.0	28.6	23.8	28.6		3.62	1.12

46. Brief case studies or descriptions of “best practices” for ed-tech procurement by school districts

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	0.0	3.8	23.1	46.2	26.9		3.96	0.82
Large Provider	0.0	0.0	19.0	66.7	14.3		3.95	0.59

47. Guidelines for best practices by individual district stakeholder groups (administration, businesses, end-users, etc.)

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	0.0	0.0	23.1	57.7	19.2		3.96	0.66
Large Provider	4.8	9.5	19.0	57.1	9.5		3.57	0.98

49. A national website for providers and school districts, which provides information on procurement practices, product availability, and evidence

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	4.0	4.0	20.0	24.0	48.0		4.08	1.12
Large Provider	9.5	14.3	19.0	28.6	28.6		3.52	1.33

50. Standard contract language developed by a respected third party

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	3.8	23.1	19.2	23.1	30.8		3.54	1.27
Large Provider	9.5	23.8	9.5	57.1	0.0		3.14	1.11

51. Other (please specify and rate):

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	68.8	0.0	12.5	0.0	18.8		2.00	1.63
Large Provider	44.4	0.0	11.1	11.1	33.3		2.89	1.90

Guidelines for district expansion after the pilot phase without a new competitive procurement process

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	0.0	0.0	7.7	34.6	57.7		4.50 ^a	0.65
Large Provider	0.0	9.5	19.0	42.9	28.6		3.90	0.94

^a Small Providers scored higher than Large Providers, $p = .02$

Guidelines for providers in building relationships with school districts.

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	0.0	11.5	23.1	30.8	34.6		3.88 ^a	1.03
Large Provider	14.3	19.0	23.8	33.3	9.5		3.05	1.24

^a Small Providers scored higher than Large Providers, $p = .02$

Policies for district contracting without a RFP process

Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Small Provider	0.0	7.7	11.5	34.6	46.2		4.19	0.94
Large Provider	4.8	4.8	14.3	61.9	14.3		3.76	0.94

Appendix I: Descriptive Statistics and Response Frequencies for Cross-Validation

Indicate your degree of satisfaction with each of the following aspects of procuring ed-tech products:

1. The district's processes for identifying, evaluating, and acquiring needed ed-tech products

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Secondary	2.1	4.3	14.9	51.1	27.7	3.98	0.90
Core	0.0	4.7	18.6	58.1	18.6	3.91	0.75

2. The district's competitive procurement processes (RFP or other) for obtaining/processing applications from vendors

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Secondary	2.1	4.3	10.6	57.4	25.5	4.00	0.86
Core	0.0	4.7	23.3	55.8	16.3	3.84	0.75

3. The district's non-competitive procurement processes (sole source or other) for obtaining/processing applications from vendors.

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Secondary	0.0	4.3	10.9	58.7	26.1	4.07	0.74
Core	0.0	7.0	7.0	69.8	16.3	3.95	0.72

4. Communications between district stakeholders (curriculum director, principals, teachers, ed-tech director, procurement officer, myself) regarding products to address specific instructional needs.

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Secondary	0.0	10.6	19.1	53.2	17.0	3.77	0.87
Core	0.0	14.0	18.6	44.2	23.3	3.77	0.97

5. The involvement by end-users (e.g., principals and teachers) in the selection and acquisition of products.

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Secondary	0.0	10.6	14.9	46.8	27.7	3.91	0.93
Core	0.0	18.6	11.6	62.8	7.0	3.58	0.88

6. Providers' knowledge of state, municipal, and district purchasing policies

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Secondary	0.0	10.9	26.1	50.0	13.0	3.65	0.85
Core	0.0	11.6	37.2	44.2	7.0	3.47	0.80

7. The credibility of product effectiveness evidence submitted by providers

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Secondary	0.0	19.1	36.2	40.4	4.3	3.30	0.83
Core	4.7	14.0	32.6	46.5	2.3	3.28	0.91

8. The time required to complete procurement processes and bring products to end-users

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	<i>M</i>	<i>SD</i>
Secondary	2.1	21.3	17.0	53.2	6.4	3.40	0.97
Core	4.7	23.3	11.6	55.8	4.7	3.33	1.04

9. The success of typical purchasing decisions in obtaining the desired ed-tech products that meet specifically identified instructional needs

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	M	SD
Secondary	0.0	8.5	10.6	68.1	12.8	3.85	0.75
Core	0.0	4.7	18.6	67.4	9.3	3.81	0.66

10. State or municipal laws that govern procurement processes

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	M	SD
Secondary	4.3	19.1	34.0	36.2	6.4	3.21	0.98
Core	9.3	11.6	27.9	46.5	4.7	3.26	1.05

11. The involvement of the school board in procurement processes

Superintendent Stakeholder	Very Unsatisfied %	Unsatisfied %	Neutral (neither satisfied nor unsatisfied) %	Satisfied %	Very Satisfied %	M	SD
Secondary	4.3	4.3	21.3	42.6	27.7	3.85	1.02
Core	2.3	0.0	14.0	69.8	14.0	3.93	0.70

Indicate your level of agreement or disagreement with each of the following statements.

12. District procurement processes meet contemporary needs for product acquisitions

Superintendent Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Secondary	0.0	8.5	17.0	59.6	14.9	3.81	0.80
Core	2.3	16.3	11.6	65.1	4.7	3.53	0.91

13. De-centralized school procurement processes (significant school autonomy) are desirable for acquiring needed ed-tech products

Superintendent Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Secondary	19.1	42.6	19.1	19.1	0.0	2.38	1.01
Core	14.0	41.9	16.3	18.6	9.3	2.67	1.21

14. The district would be likely to use standardized RFPs and contract documents that reflect best practices nationally

Superintendent Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Secondary	0.0	4.3	14.9	61.7	19.1	3.96	0.72
Core	4.7	4.7	18.6	58.1	14.0	3.72	0.93

15. Our procurement processes help me buy the products I already know I want even if from less established providers/brands

Superintendent Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Secondary	0.0	12.8	23.4	55.3	8.5	3.60	0.83
Core	4.7	9.3	32.6	53.5	0.0	3.35	0.84

16. If procurement processes were more efficient (e.g., quicker, less demanding on districts and providers), product costs would decrease

Superintendent Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Secondary	0.0	17.0	36.2	38.3	8.5	3.38	0.87
Core	0.0	23.3	25.6	46.5	4.7	3.33	0.89

17. Data privacy and security needs make procurement processes more difficult for ed-tech products than for other products

Superintendent Stakeholder	Strongly Disagree %	Disagree %	Neutral or Undecided %	Agree %	Strongly Agree %	<i>M</i>	<i>SD</i>
Secondary	0.0	23.4	42.6	25.5	8.5	3.19	0.90
Core	4.7	14.0	30.2	44.2	7.0	3.35	0.97

Rate the degree to which each of the following individuals or groups are involved in procurement processes for ed-tech products.

18. Parents

Superintendent Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Secondary	45.7	28.3	23.9	2.2	0.0		1.83	0.88
Core	50.0	23.8	26.2	0.0	0.0		1.76	0.85

19. Students

Superintendent Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Secondary	34.0	23.4	29.8	10.6	2.1		2.23	1.11
Core	23.8	21.4	35.7	14.3	4.8		2.55	1.15

20. Teachers

Superintendent Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Secondary	2.1	2.1	36.2	38.3	21.3		3.74	0.90
Core	4.7	7.0	27.9	39.5	20.9		3.65	1.04

21. Principals

Superintendent Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Secondary	0.0	2.1	10.6	42.6	44.7		4.30 ^a	0.75
Core	0.0	2.3	25.6	48.8	23.3		3.93	0.77

^a Secondary sample scored higher than the Core sample, $p = .02$.

22. Chief Academic Officer (Curriculum Director or similar)

Superintendent Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%	%		
Secondary	0.0	6.4	6.4	19.1	68.1		4.49	0.88
Core	0.0	0.0	7.1	40.5	52.4		4.45	0.63

23. Chief Financial Officer

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	4.3	6.4	14.9	29.8	44.7	4.04 ^a	1.12
Core	4.8	14.3	28.6	28.6	23.8	3.52	1.15

^a Secondary sample scored higher than the General sample, $p = .02$.

24. Chief Information Officer

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	7.7	2.6	20.5	23.1	46.2	3.97	1.22
Core	2.9	11.8	23.5	20.6	41.2	3.85	1.18

25. Chief Purchasing Officer

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	2.6	5.3	18.4	28.9	44.7	4.08	1.05
Core	5.6	8.3	27.8	13.9	44.4	3.83	1.25

26. Technology Director

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	0.0	4.4	13.3	82.2	4.78	0.52
Core	0.0	0.0	0.0	14.3	85.7	4.86	0.35

27. School Board

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	10.6	31.9	34.0	10.6	12.8	2.83	1.17
Core	7.0	27.9	46.5	14.0	4.7	2.81	0.93

28. Yourself (superintendent)

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	2.2	21.7	45.7	30.4	4.04	0.79
Core	0.0	9.3	27.9	27.9	34.9	3.88	1.01

29. Other (please specify and rate)

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	25.0	0.0	25.0	50.0	4.00	1.41
Core	0.0	0.0	60.0	20.0	20.0	3.60	0.89

To what degree does the district rely on each of the following to identify, select, and acquire quality products?

30. A formal, competitive decision-making process (e.g., RFP)

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	6.4	25.5	38.3	29.8	3.91	0.91
Core	7.1	4.8	14.3	45.2	28.6	3.83	1.12

31. A noncompetitive procurement process (sole source or other)

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	6.4	14.9	36.2	34.0	8.5	3.23	1.03
Core	0.0	19.0	45.2	31.0	4.8	3.21	0.81

32. A cooperative purchasing process with other districts

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	17.0	21.3	21.3	25.5	14.9	3.00	1.34
Core	14.3	23.8	21.4	35.7	4.8	2.93	1.18

33. Rigorous evaluation evidence (from published studies, literature reviews, etc.)

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	4.3	12.8	25.5	44.7	12.8	3.49	1.02
Core	2.4	9.5	33.3	35.7	19.0	3.60	0.99

34. Non-rigorous evaluation evidence (e.g., from providers' in-house studies)

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	12.8	29.8	44.7	12.8	0.0	2.57	0.88
Core	4.8	26.2	47.6	14.3	7.1	2.93	0.95

35. Recommendations from sales representatives

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	2.1	40.4	44.7	12.8	0.0	2.68	0.73
Core	9.5	35.7	40.5	11.9	2.4	2.62	0.91

36. Recommendations from end-users (principals or teachers)

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	0.0	12.8	63.8	23.4	4.11	0.60
Core	0.0	0.0	17.1	56.1	26.8	4.10	0.66

37. Recommendations from other districts or consultants

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	10.6	21.3	53.2	14.9	3.72	0.85
Core	0.0	0.0	23.8	52.4	23.8	4.00	0.70

38. Choosing from a list of “approved” (or recognized) providers/brands

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	14.9	36.2	38.3	10.6	3.45	0.88
Core	4.9	9.8	34.1	48.8	2.4	3.34	0.88

39. Recommendations or ratings on an informational website (please specify which):

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	34.8	8.7	43.5	10.9	2.2	2.37	1.14
Core	25.6	23.1	28.2	20.5	2.6	2.51	1.17

40. Pilot tryouts of products within the district

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	2.1	4.3	29.8	38.3	25.5	3.81	0.95
Core	0.0	0.0	19.0	42.9	38.1	4.19	0.74

41. Products with the lowest cost

Superintendent Stakeholder	Not at All		Moderately		Extensively	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	8.5	23.4	44.7	21.3	2.1	2.85	0.93
Core	0.0	16.7	45.2	31.0	7.1	3.29 ^a	0.84

^a Core sample scored higher than the secondary sample, $p = .04$

42. “Bundled” products (both software and hardware together)

Superintendent Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Secondary	0.0	29.8	34.0	34.0	2.1	3.09	0.86	
Core	7.1	21.4	28.6	38.1	4.8	3.12	1.04	

43. Other (please specify and rate):

Superintendent Stakeholder	Not at All		Moderately		Extensively		<i>M</i>	<i>SD</i>
	%	%	%	%	%			
Secondary	90.6	0.0	6.3	3.1	0.0	1.22	0.71	
Core	63.6	0.0	9.1	18.2	9.1	2.09 ^a	1.58	

^a Core sample scored higher than the secondary sample, $p = .04$.

To what degree might the following tools and guidelines be helpful to your district in identifying, evaluating, and/or acquiring effective ed-tech products?

44. Standard evaluation rubrics for judging the quality of products

Superintendent Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	0.0	17.0	44.7	38.3	4.21	0.72
Core	0.0	4.7	18.6	51.2	25.6	3.98	0.80

45. Guidelines for conducting effective pilot studies to determine how well a product works

Superintendent Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	4.3	17.0	44.7	34.0	4.09	0.83
Core	0.0	11.6	14.0	46.5	27.9	3.91	0.95

46. Brief case studies or descriptions of “best practices” for ed-tech procurement by school districts

Superintendent Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	2.1	19.1	34.0	44.7	4.21	0.83
Core	0.0	7.0	23.3	32.6	37.2	4.00	0.95

47. Guidelines for best practices by individual district stakeholder groups (administration, businesses, end-users, etc.)

Superintendent Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	0.0	0.0	17.0	53.2	29.8	4.13	0.68
Core	0.0	4.7	11.6	46.5	37.2	4.16	0.81

48. Guidelines for best practices for providers to use in working with school districts

Superintendent Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	2.1	2.1	23.4	38.3	34.0	4.00	0.93
Core	0.0	9.3	23.3	41.9	25.6	3.84	0.92

49. A national website for providers and school districts, which provides information on procurement practices, product availability, and evidence

Superintendent Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	4.3	2.1	27.7	38.3	27.7	3.83	1.01
Core	0.0	9.3	25.6	39.5	25.6	3.81	0.93

50. Standard contract language developed by a respected third party

Superintendent Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	2.1	10.6	23.4	38.3	25.5	3.74	1.03
Core	2.3	11.6	23.3	41.9	20.9	3.67	1.02

51. Other (please specify and rate):

Superintendent Stakeholder	Not helpful at all		Moderately helpful		Extensively helpful	<i>M</i>	<i>SD</i>
	%	%	%	%	%		
Secondary	81.3	0.0	0.0	6.3	12.5	1.69	1.47
Core	70.0	10.0	10.0	10.0	0.0	1.60	1.08