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## Do teachers and students get the ed-tech products they need: The challenges of ed-tech procurement in a rapidly growing market

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### Abstract

Ed-tech courseware products to support teaching and learning are being developed and made available for acquisition by school districts at a rapid rate. In this growing market, developers and providers face challenges with making their products visible to customers, while school district stakeholders must grapple with “discovering” which products of the many available best address their instructional needs. The present study presents the experiences with and perceptions about the procurement process from 47 superintendents representing diverse school districts in the U. S. Results indicate that, while improvements are desired in many aspects of the procurement process, the superintendents, overall, believe that, once desired products are identified, they are generally able to acquire them. Difficulties lie in tighter budgets, discovering products that are potentially the best choices, and evaluating the effectiveness of the products selected as options. These findings are presented and interpreted in relation to five major “Action Points” in the procurement process, and also with regard to implications for evaluating how educational technology impacts K-12 instruction.

Keywords: Ed-tech, school districts, K-12.

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## 1. Introduction

In K-12 education, the identification, evaluation, and acquisition of educational technology products (herein referred to as procurement) is an essential but often can be a 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, and presents many barriers-to-entry for smaller tech developers and start-ups. Furthermore, there are conflicting perceptions of the efficacy of the procurement process by school district decision-makers and ed-tech providers. School administrators have conveyed a distrust of vendors' claims of their products' effectiveness, and providers view the procurement process to be overly bureaucratic, frustrating, and difficult to emerge as a new player in the ed-tech product market (Chaudry, 2013). 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 rarely are 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? 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 superintendents in diverse school districts throughout the U.S. This research was part of a larger study expected to be completed by late fall, 2014, and for which we will describe the methodology in this paper. The present research questions were:

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 superintendents?
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 and efficient ed-tech procurement process?

In the following sections, we first review the methodology and report results from the survey data collected from the superintendents. 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. Of particular relevance to this Special Issue will be an examination of how the effectiveness of technology is evaluated for procurement purposes, where the emphasis is on making quick-turnaround decisions about a product's quality and potential advantages over competing products to address instructional needs.

## 2. Rationale

While 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? How can procurement processes be improved to place desired products in the hands of teachers and students more quickly and economically?

## 3. An Operational Model

Based on our review of the literature and perspectives gained during early data collection for this study, we present an operational model consisting of five categories:

- *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.
- *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 internal (e.g., school board) or external (state or municipal) policies.

## 4. Method

### 4.1. Participants

A sample of superintendents ( $n = 47$ ) was compiled through responses to an emailed survey link deployed through the American Association of School Administrators. These participants were from districts located in 25 states.

In the larger study to be completed in several months, additional 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. The larger study also includes “case studies,” consisting of more intensive interviews with stakeholders in three districts identified as using more effective procurement processes.

### 4.2. Technical Advisory Group (TAG) Meetings

To obtain information, guidance, and feedback for the study, a Technical Advisory Group (TAG) consisting of approximately 20 members were formed. Members of the TAG were purposefully selected based on having prominence and expertise in their personal roles in district procurement (superintendents, curriculum directors, business officers, technology directors, principals, and teachers) and providers (smaller and larger, established and newer). In three different webinar meetings, TAG members were asked questions regarding:

- How they perceived the procurement process.
- Barriers
- Best practices
- The questions most critical to ask on the survey
- The appropriateness of the methodology
- Tools and products that could improve procurement efficiency

The TAG reviewed several drafts of the superintendent survey to be described below, and provided feedback.

### 4.3. Superintendent Survey

A copy of the Superintendent Survey is provided in the appendix. It was designed to be administered online, and consisted of 54 items, mixing open-ended and close-ended forms. Different sections dealt with major components of the procurement process, including general satisfaction, involvement by various district stakeholders (e.g., end users, technology directors, curriculum directors, business officers, etc.), sources of information and evidence about products, alternative selection and purchasing strategies, perceptions of providers’ involvement and communications, usage of pilots to field-test products, and desired tools or supports for improving procurement processes.

## 5. Results

In this section, we report results from the survey administered to superintendents. Appendix B presents a summary of the frequencies of responses and means to closed-ended items using rating scales. To give the findings more meaning and connection to the flow of typical procurement activities, we organize them here in accord to each of the *Action Points* comprising the Operational Framework presented earlier. 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.

## 6. Overall Perspectives

**How many products are purchased?** Most superintendents (41%) indicated purchasing less than 15 products each year.

## 7. Satisfaction with the procurement process

Superintendents were asked to indicate their degree of satisfaction towards the district's process for identifying, evaluating, and acquiring needed ed-tech products. Superintendents were predominantly satisfied ( $M = 3.98$ ), with 79% indicating satisfied or very satisfied with the process employed. Further, superintendents were also in agreement ( $M = 3.81$ ) that the district procurement processes meet contemporary needs for product acquisitions.

## 8. 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 superintendents were moderately satisfied ( $M = 3.77$ ) with the communications between stakeholders regarding products to address specific instructional needs; 70% were satisfied to very satisfied.

## 9. Implications

The procurement process, in general, is viewed as working by the majority of superintendents. Very small percentages of superintendents expressed negative (dissatisfied) views about the procurement process (6.4% very unsatisfied or unsatisfied) or their effectiveness in meeting contemporary needs (8.5% disagreed). Communications among district stakeholders are viewed as generally positive among superintendents, but may be less frequent and open as they could be (10.6% unsatisfied).

## 10. Action Point I: Allotment of Funding

The most frequent challenge expressed in superintendent's open-ended survey responses related to funding and financial concerns. Participants referenced the cost of items, as well as reductions in the technology budgets for school districts. For example, a superintendent commented on the lack of a, "stable and predictable revenue stream for the tech needs," while another noted, "budget constraints."

Although budget concerns were a noted challenge, survey responses showed superintendents to express a low ( $M = 2.85$ ) reliance on selecting products with the lowest cost. Only 23.4% of superintendents indicated a moderate-extensive reliance on selecting low-cost options. “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 ( $M = 3.09$ ).

Another cost-saving option is cooperative purchasing with other districts. Superintendents indicated a moderate ( $M = 3.00$ ) reliance on cooperative purchasing agreements for ed-tech. Roughly 40% of participants indicated a moderate-extensive or extensive use of cooperative purchasing.

## **11. 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 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. Presently, cooperative purchasing and bundled products – both touted at times as potential cost-saving measures – appear to be rarely to sometimes used by and generally unappealing to school districts.

## **12. Action Point II: Needs Assessment**

### *12.1. 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, superintendents indicated they were moderately satisfied ( $M = 3.85$ ) about the success of typical purchasing decisions for obtaining products that meet identified instructional needs.

### *12.2. Who’s involved in procurement, more or less?*

Identifying classroom needs for ed-tech products requires information from many sources. Arguably, the end-users (teachers and principals) have key roles in identifying where ed-tech support is most essential. But in reality, to what degree are they involved? In the present study, superintendents responded to a series of survey items that assessed the degree of involvement by various stakeholders in ed-tech procurement (see Figure 1). Respondents rated the technology director as having the greatest involvement, followed by the chief academic officer and then principals. Notably, teachers were rated as having only a moderate involvement after other central office administrators. Not surprisingly, superintendents reported the lowest involvement of parents in ed-tech procurement, followed by students.

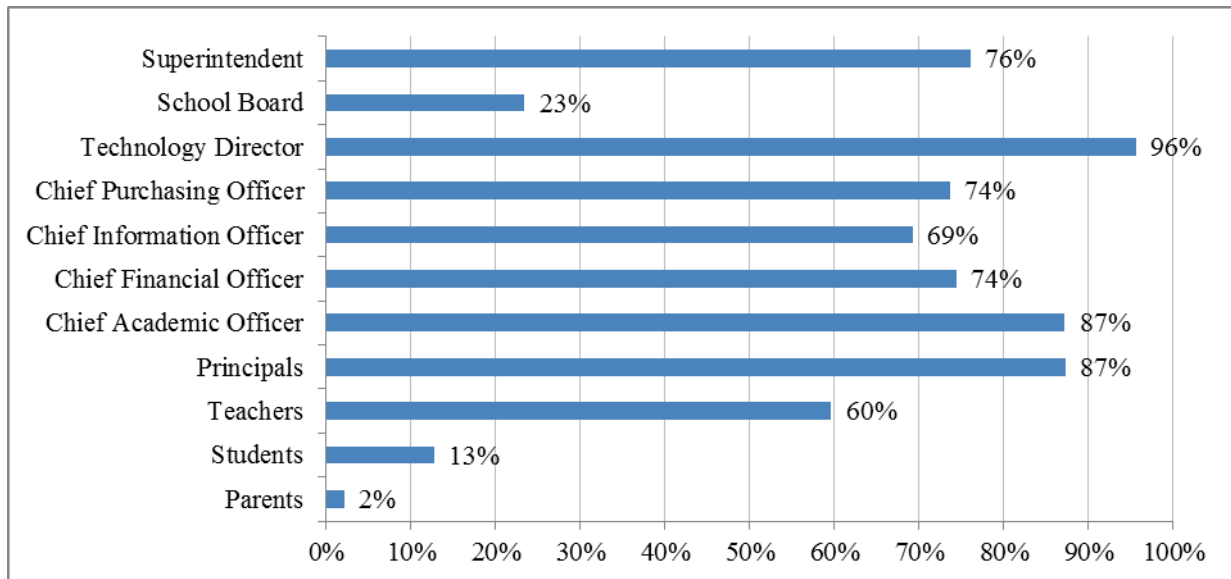


Figure 1. Participant frequency of moderate-extensive and extensive responses regarding the involvement of various stakeholders.

The survey also examined the degree to which participants were satisfied with end-user involvement. Results revealed mostly positive reactions ( $M = 3.91$ ) by superintendents, with 75% of respondents were satisfied or very satisfied with the level of end-user involvement. Open-ended survey responses corroborated the satisfactions with and importance of end-user involvement. One superintendent referenced the practice of, “seeking feedback from students and teachers,” while another commented on, “teacher involvement for practicality of use and buy-in.” Another superintendent described a process where,

...technology, curricular, and financial directors meet with principals and teachers to identify an educational need and develop a potential solution that specifies how the program will increase student learning and satisfy the identified need.

### 12.3. Implications

Nearly all ed-tech products are acquired based on some type of needs assessment. The present findings suggest that such assessments are frequently information decisions by district administrators such as technology directors and curriculum directors, which are largely focused on bolstering student achievement in certain areas and facilitating efforts by teachers to use assessment data for personalizing instruction. While teachers and principals arguably have the sharpest insights into instructional needs, they appear to be only “moderately” involved (and principals more than teachers) in this capacity. 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).

#### **14. Action Point III: Discovery of Ed-tech Products**

The challenge of identifying products to meet an instructional need, as well as the rapid development of ed-tech products available was a common theme for superintendents in survey responses. For example, one superintendent commented on the district's struggle in, "finding products that are aligned with curriculum/standards needs." Another superintendent commented on the, "short life cycle of updated tech/constantly changing tech," while another noted the difficult of, "tech changing faster than we can keep up."

##### *14.1. Implications*

Discovery is a serious challenge for school districts. 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. 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, teacher attitudes toward ed-tech products they were using, the findings indicated overall dissatisfaction (Bill & Melinda Gates Foundation, 2014).

#### **15. 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".

##### *15.1. Sources of information*

Participants were surveyed regarding their reliance on various sources of information (see Figure 2) of ed-tech products. Such information could inform not only evaluation, but also discovery (*Action Point III*) to some degree.



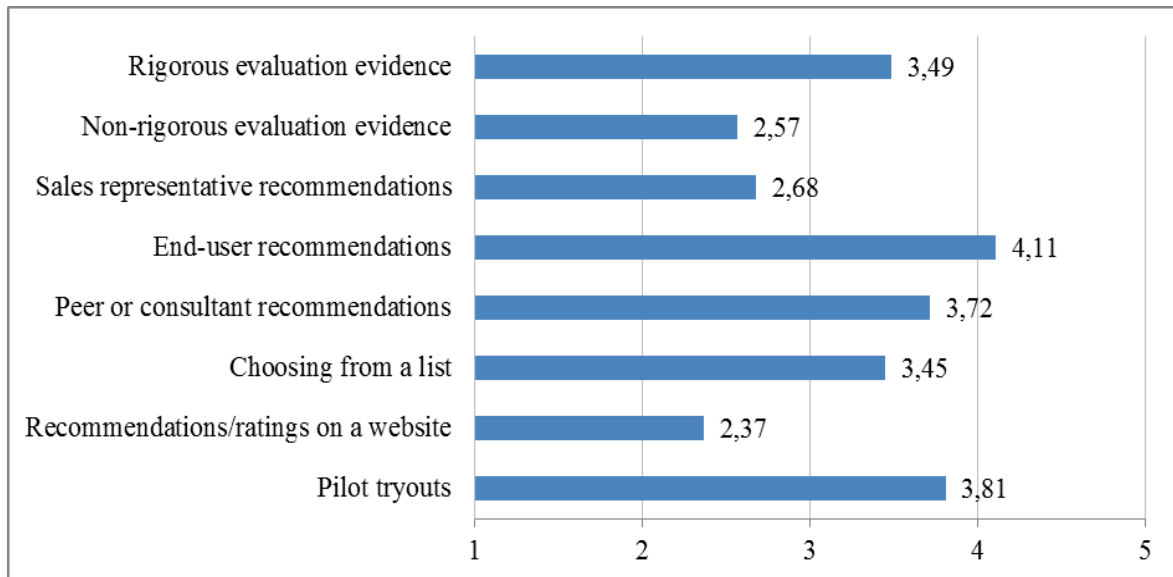


Figure 2. Mean responses for reliance on sources of information (1 = not at all, 5 = extensively).

Superintendents reported the greatest reliance on end-user recommendations ( $M = 4.11$ ), pilot tryouts ( $M = 3.81$ ), recommendations from peers or consultants ( $M = 3.72$ ), and rigorous evaluation evidence ( $M = 3.49$ ). Participants reported the lowest reliance on non-rigorous evidence ( $M = 2.57$ ), recommendations from sales representatives ( $M = 2.68$ ), and recommendations or ratings found on a website ( $M = 2.37$ ).

### 15.2. Collecting evidence: End-user recommendations and piloting products.

The above results indicate that school districts actively seek information on product attributes and quality from a variety of sources, most pervasively from end-user recommendations and pilot tryouts. Specifically, 23.4% of superintendents indicated an extensive reliance on end-user recommendations, and 63.8% reported a moderate-extensive reliance on this source of information.

The involvement of end-users in the evaluation of ed-tech products may be best understood through the implementation of pilot tryouts. Approximately 25% of superintendents indicated an extensive reliance on pilots, and 38.3% indicated a moderate-extensive reliance. The practices that superintendents indicated best facilitate an efficient procurement process corroborate the importance of pilots and obtaining end-user feedback. The most commonly referenced practice was the use of pilots, where one superintendent noted the use of, “pilot programs aimed at stakeholder involvement in the decision making process,” and another commented on the practice of, “piloting with selected staff and buildings.”

### 15.3. Consulting peers

Nearly all superintendents (93.6%) indicated at least a moderate reliance on peer recommendations. Second to the use of pilots, they referenced consulting peers as an important best practice in ed-tech procurement. A participant commented on the value of “consulting with similarly situated districts,” whereas another referenced, “visitations to other school districts to review

implementation of [an] ed-tech product.” Another superintendent referred to the “review of best practices and related evaluation outcomes from other schools.”

#### 15.4. Evidence of effectiveness

The results reported above for *Action Point IV* (“Evaluation”) shows fairly high reliance on internal end-users’ perceptions and external peers’ about the quality of particular ed-tech products. End-user recommendations, in turn, appear to be largely based on direct interactions with the products via “informal” piloting activities. Superintendents also conveyed on the survey that rigorous evidence of product effectiveness was another important source of information for product selection. For example, 13% of the superintendents surveyed conveyed that they relied upon rigorous evidence extensively while most (83%) rated their reliance as at least moderate (a rating of 3-5). Although not referenced as heavily as pilots and peer recommendations, superintendents did comment on the importance of obtaining evidence and examining research as a best practice. Interestingly but perhaps not surprisingly, superintendents were only moderately ( $M = 3.30$ ) satisfied with the credibility of effectiveness evidence submitted by providers.

#### 15.5. Implications

Findings for *Action Point IV* 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 pilot studies of selected products. Most providers have non-rigorous 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.

### 16. 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.

#### 16.1. Does it take too long?

One important factor in purchasing is the amount of time it takes to acquire a selected ed-tech product. A survey question 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 participants were generally neutral ( $M = 3.40$ ) in their satisfaction with the time element, with 60% satisfied or very satisfied. Further, when asked about the amount of time smaller ed-tech purchases require, a timeframe of 1-3 months was reported by most superintendents (76%). For larger purchases, a timeframe of 1-3 months was also reported by 50% of superintendents, and 41% indicated a timeframe of 4-6 months.

### 16.2. School purchasing

Superintendents disagreed ( $M = 2.38$ ) with the survey item pertaining to the desirability of decentralized school procurement processes. Only 19% of the participants agreed that significant school autonomy is desirable for acquiring needed ed-tech products.

### 16.3. 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. Superintendents described the school board as only slightly to moderately ( $M = 2.83$ ) involved in ed-tech procurement. However, superintendents were generally satisfied ( $M = 3.85$ ) with the involvement of the school board in procurement processes. These participants were slightly less satisfied ( $M = 3.21$ ) with state or municipal laws that govern procurement processes.

### 16.4. How acquisitions are made

Regarding acquisition modes employed for procurement, participants indicated a moderate-extensive reliance ( $M = 3.91$ ) on a formal, competitive process (e.g., RFP) and a moderate reliance ( $M = 3.23$ ) on a noncompetitive process (e.g., sole source or other) (see Figure 3). A cooperative purchasing process was utilized to a lesser extent ( $M = 3.00$ ).

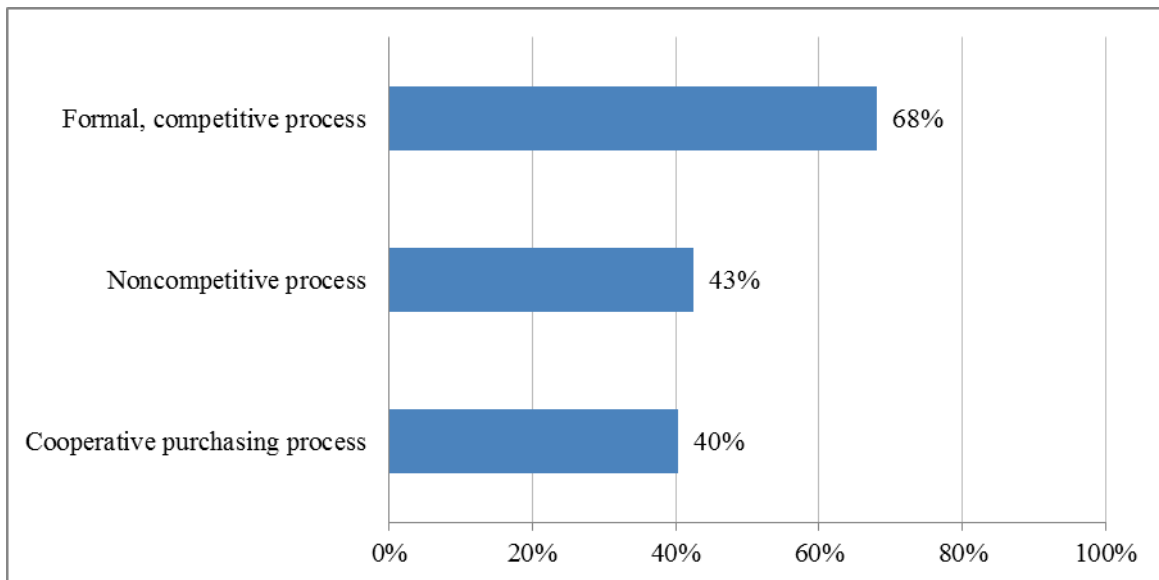


Figure 3. Frequency of participants' moderate-extensive and extensive responses to reliance on purchasing processes.

Further, superintendents were satisfied ( $M = 4.00$ ) with the district's competitive procurement process for obtaining and processing applications from vendors. Participants were also satisfied ( $M = 4.07$ ) with the noncompetitive process employed. However, superintendents were slightly less satisfied ( $M = 3.65$ ) with provider's knowledge of state, municipal, and district purchasing policies, indicating a potential communication or knowledge gap between districts and providers.

### 16.5. 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 positive towards both competitive (e.g. RFP) and noncompetitive (e.g. sole source) procurement processes. Nor were there apparent concerns regarding school board involvement or state restrictions.

### 17. Ways of Improving Ed-tech Procurement

Within and across all *Action Points*, there are naturally ways of facilitating school districts' and providers' procurement activities. Participants were asked their opinions about the helpfulness of various tools and information (see Figure 4).

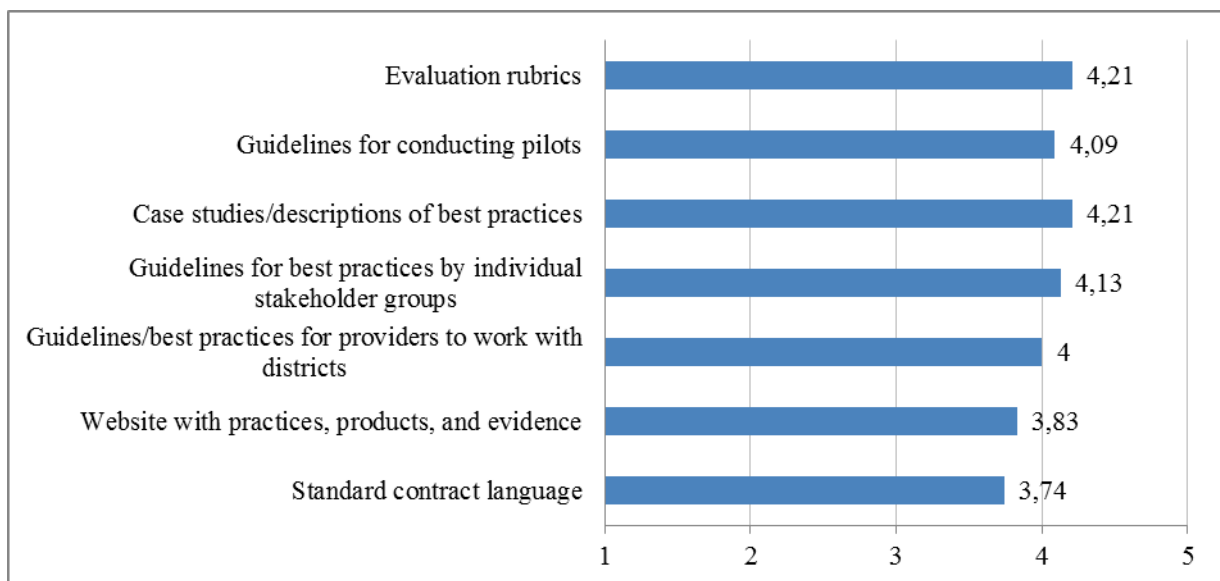


Figure 3. Mean participant responses to the helpfulness of potential information and tools (1 = not at all helpful, 5 = extremely helpful).

Participants viewed the suggested tools and resources as moderately to extensively helpful, though specific suggestions were viewed as more helpful than others. Standard evaluation rubrics for judging the quality of products and brief case studies or descriptions of “best practices” for ed-tech procurement by school districts were rated as the most helpful. These options were also referenced in an open-ended survey item. Although a website containing product information and evidence was not rated as highly as the aforementioned resources, objective, vendor-neutral product information, such as that provided by external, third party evaluations and user reviews were referenced heavily in open-ended responses. A superintendent indicated the need for, “product evaluations from respected sources,” and another stated the need for, “objective 3<sup>rd</sup> party review of products.” In addition, superintendents mentioned the desire for a means to learn from other districts. For example, two superintendents stated respectively, “the opportunity to network with similar districts,” and “network with other school districts.”

## 18. Discussion and Conclusion

Our results from the superintendent survey indicate that 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. Once school districts identify products that they want to acquire, they generally seem able to, even for larger purchases, within one to three months. 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. In this regard, although 60% of the superintendents indicated that teachers have more-than-moderate to extensive involvement in the procurement of ed-tech products, this rating was less than for any other district stakeholder except students and parents. Seemingly, those who are so directly affected by the product should have a more central role in discovery and evaluation. Superintendents did indicate having the highest reliance on “end-user recommendations” in selecting products, but it is uncertain whether these recommendations were informal or an integral part of the procurement process.

Pilots appear to have strong potential for districts and providers to collaborate in field-testing products for broader district adoption. In the current survey, they were rated the second most frequent source of information (behind end-user recommendations) about ed-tech products. 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.

Despite having moderate satisfaction with the procurement process overall, superintendents clearly see the need for improvements and supports. High on their list is “rubrics” or guidelines for selecting high-quality products along with case studies of effective practices. Other useful supports would be guidelines for best practices by individual stakeholder groups (e.g., technology directors, principals, business officers) and for conducting effective pilot studies. A national website (“Ed-Tech Product Information Exchange) was also viewed as useful.

Overall, the findings show that selected ed-tech products are making their way into classrooms. But due to discovery and evaluation barriers, the “best” or “most needed” products by schools and the districts in general are likely overlooked (i.e., not found or sufficiently vetted to emerge above the pack).

## 19. Evaluating Technology Impacts

Reliance on evidence of product effectiveness in making product selections is highly valued by superintendents of small and large districts. 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. In contrast to the RCTs and other rigorous designs intended to prove causal relationships between programs and student achievement gains, such studies largely focus on teacher

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and student qualitative reports on usability, satisfaction, engagement, and potential for integration with everyday teaching and learning. Unfortunately, few providers seek opportunities for their products to be evaluated in these types of studies, and districts may not understand the options available to them to obtain evidence that is more practical and affordable.

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## Appendix A

### Superintendent Survey

#### A. Indicate your degree of satisfaction with each of the following aspects of procuring ed-tech products.

1. Very Unsatisfied
2. Unsatisfied
3. Neutral (neither satisfied nor unsatisfied)
4. Satisfied
5. Very Satisfied

1. The district's processes for identifying, evaluating, and acquiring needed ed-tech products
2. The district's competitive procurement processes (RFP or other) for obtaining/processing applications from vendors
3. The district's non-competitive procurement processes (RFP or other) for obtaining/processing applications from vendors
4. Communications between district stakeholders (curriculum director, principals, teachers, ed-tech director, procurement officer, myself) regarding products to address specific instructional needs
5. The involvement by end-users (e.g., principals and teachers) in the selection and acquisition of products
6. Providers' knowledge of state, municipal, and district purchasing policies
7. The credibility of product effectiveness evidence submitted by providers
8. The time required to complete procurement processes and bring products to end-users
9. The success of typical purchasing decisions in obtaining the desired ed-tech products that meet specifically identified instructional needs
10. State or municipal laws that govern procurement processes
11. The involvement of the school board in procurement processes

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

1. Strongly Disagree
2. Disagree
3. Neutral or Undecided
4. Agree
5. Strongly Agree

12. District procurement processes meet contemporary needs for product acquisitions
13. De-centralized school operations (significant school autonomy) are desirable for acquiring needed ed-tech products
14. The district would be likely to use standardized RFPs and contract documents that reflect best practices nationally
15. I feel secure in my role to pursue the products that appear most effective even if from less established providers/brands
16. If procurement processes were more efficient (e.g., quicker, less demanding on districts and providers), product costs would decrease

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

- 0 Not applicable (NA)
- 1 Not at all

- 2
- 3 Moderately
- 4
- 5 Extensively

- 17. Parents
- 18. Students
- 19. Teachers
- 20. Principals
- 21. Chief Academic Officer (Curriculum Director or similar)
- 22. Chief Financial Officer
- 23. Chief Information Officer
- 24. Chief Purchasing Officer
- 25. Technology Director
- 26. School Board
- 27. Yourself (superintendent)
- 28. Other \_\_\_\_\_(please specify and rate)

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

- 1 Not at all
- 2
- 3 Moderately
- 4
- 5 Extensively

- 29. A formal, competitive decision-making process (e.g., RFP)
- 30. A noncompetitive procurement process at the district level (sole source or other)
- 31. A cooperative purchasing process with other districts
- 32. Rigorous evaluation evidence (from published studies, literature reviews, etc.)
- 33. Non-rigorous evaluation evidence (e.g., from providers' in-house studies)
- 34. Recommendations from sales representatives
- 35. Recommendations from end-users (principals or teachers)
- 36. Recommendations from other districts or consultants
- 37. Choosing from a list of "approved" (or recognized) providers/brands
- 38. Recommendations or ratings on an informational website (please specify which)  
Website: \_\_\_\_\_
- 39. Pilot tryouts of products within the district
- 40. Products with the lowest cost
- 41. "Bundled" products (both software and hardware together)
- 42. Other \_\_\_\_\_ (please specify and rate)

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

- 1 Not helpful at all
- 2
- 3 Moderately helpful
- 4
- 5 Extremely helpful



- 43. Standard evaluation rubrics for judging the quality of products
- 44. Guidelines for conducting effective pilot studies to determine how well a product works
- 45. Brief case studies or descriptions of “best practices” for ed-tech procurement by school districts
- 46. Guidelines for best practices by individual district stakeholder groups (administration, businesses, end-users, etc.)
- 47. Guidelines for best practices for providers to use in working with school districts
- 48. A national website for providers and school districts, which provides information on procurement practices, product availability, and evidence
- 49. Other \_\_\_\_\_ (please specify and rate)

**F. Open-Ended**

- 50. What is the typical amount of time (in months) that it takes to acquire a product once an instructional need is identified and approved?
  - a. Smaller purchases: \_\_\_\_\_ month(s)
  - b. Larger purchases: \_\_\_\_\_ month(s)
- 51. Approximately how many different ed-tech products does your district purchase in a given year?  
\_\_\_\_\_
- 52. Identify and describe the practices that appear to work best in your district for acquiring quality ed-tech products. (Relate to your role as appropriate.)
  - 1. \_\_\_\_\_
  - 2. \_\_\_\_\_
  - 3. \_\_\_\_\_
- 53. Identify and describe the main challenges or barriers in your district for acquiring quality ed-tech products. (Relate to your role as appropriate.)
- 54.
  - 1. \_\_\_\_\_
  - 2. \_\_\_\_\_
  - 3. \_\_\_\_\_
- 55. (High Importance). What strategies or new tools, guidelines, or information would be most helpful to your district for improving the ed-tech procurement process? (Relate to your role as appropriate.)
- 56.
  - 1. \_\_\_\_\_
  - 2. \_\_\_\_\_
  - 3. \_\_\_\_\_
  - 4. \_\_\_\_\_

## Appendix B

### Frequencies of Responses and Descriptive Statistics for Survey Items

**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.

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
Superintendent	2.1	4.3	14.9	51.1	27.7	3.98	0.90

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

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
Superintendent	2.1	4.3	10.6	57.4	25.5	4.00	0.86

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

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
Superintendent	0.0	4.3	10.9	58.7	26.1	4.07	0.74

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

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
Superintendent	0.0	10.6	19.1	53.2	17.0	3.77	0.87

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

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
Superintendent	0.0	10.6	14.9	46.8	27.7	3.91	0.93

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

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
Superintendent	0.0	10.9	26.1	50.0	13.0	3.65	0.85

7. The credibility of product effectiveness evidence submitted by providers.

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
Superintendent	0.0	19.1	36.2	40.4	4.3	3.30	0.83

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

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
Superintendent	2.1	21.3	17.0	53.2	6.4	3.40	0.97

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

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
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Superintendent	0.0	8.5	10.6	68.1	12.8	3.85	0.75
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10. State or municipal laws that govern procurement processes.

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
Superintendent	4.3	19.1	34.0	36.2	6.4	3.21	0.98

11. The involvement of the school board in procurement processes.

	<b>Very Unsatisfied %</b>	<b>Unsatisfied %</b>	<b>Neutral (neither satisfied nor unsatisfied) %</b>	<b>Satisfied %</b>	<b>Very Satisfied %</b>	<b>M</b>	<b>SD</b>
Superintendent	4.3	4.3	21.3	42.6	27.7	3.85	1.02

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

12. District procurement processes meet contemporary needs for product acquisitions.

	<b>Strongly Disagree %</b>	<b>Disagree %</b>	<b>Neutral or Undecided %</b>	<b>Agree %</b>	<b>Strongly Agree %</b>	<b>M</b>	<b>SD</b>
Superintendent	0.0	8.5	17.0	59.6	14.9	3.81	0.80

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

	<b>Strongly Disagree %</b>	<b>Disagree %</b>	<b>Neutral or Undecided %</b>	<b>Agree %</b>	<b>Strongly Agree %</b>	<b>M</b>	<b>SD</b>
Superintendent	19.1	42.6	19.1	19.1	0.0	2.38	1.01

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

	<b>Strongly Disagree %</b>	<b>Disagree %</b>	<b>Neutral or Undecided %</b>	<b>Agree %</b>	<b>Strongly Agree %</b>	<b>M</b>	<b>SD</b>
Superintendent	0.0	4.3	14.9	61.7	19.1	3.96	0.72

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

	<b>Strongly Disagree</b> %	<b>Disagree</b> %	<b>Neutral or Undecided</b> %	<b>Agree</b> %	<b>Strongly Agree</b> %	<b>M</b>	<b>SD</b>
Superintendent	0.0	12.8	23.4	55.3	8.5	3.60	0.83

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

	<b>Strongly Disagree</b> %	<b>Disagree</b> %	<b>Neutral or Undecided</b> %	<b>Agree</b> %	<b>Strongly Agree</b> %	<b>M</b>	<b>SD</b>
Superintendent	0.0	17.0	36.2	38.3	8.5	3.38	0.87

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

	<b>Strongly Disagree</b> %	<b>Disagree</b> %	<b>Neutral or Undecided</b> %	<b>Agree</b> %	<b>Strongly Agree</b> %	<b>M</b>	<b>SD</b>
Superintendent	0.0	23.4	42.6	25.5	8.5	3.19	0.90

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

<b>Stakeholder</b>	<b>Not at All</b> %	<b></b> %	<b>Moderately</b> %	<b></b> %	<b>Extensively</b> %	<b>M</b>	<b>SD</b>
18. Parents	45.7	28.3	23.9	2.2	0.0	1.83	0.88
19. Students	34.0	23.4	29.8	10.6	2.1	2.23	1.11
20. Teachers	2.1	2.1	36.2	38.3	21.3	3.74	0.90
21. Principals	0.0	2.1	10.6	42.6	44.7	4.30	0.75
22. Chief Academic Officer	0.0	6.4	6.4	19.1	68.1	4.49	0.88
23. Chief Financial Officer	4.3	6.4	14.9	29.8	44.7	4.04	1.12
24. Chief Information Officer	7.7	2.6	20.5	23.1	46.2	3.97	1.22
25. Chief Purchasing Officer	2.6	5.3	18.4	28.9	44.7	4.08	1.05
26. Technology Director	0.0	0.0	4.4	13.3	82.2	4.78	0.52
27. School Board	10.6	31.9	34.0	10.6	12.8	2.83	1.17
28. Yourself	0.0	2.2	21.7	45.7	30.4	4.04	0.79
29. Other	0.0	25.0	0.0	25.0	50.0	4.00	1.41

**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).

	<b>Not at All</b>		<b>Moderately</b>		<b>Extensively</b>	<b>M</b>	<b>SD</b>
	%	%	%	%	%		
Superintendent	0.0	6.4	25.5	38.3	29.8	3.91	0.91

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

	<b>Not at All</b>		<b>Moderately</b>		<b>Extensively</b>	<b>M</b>	<b>SD</b>
	%	%	%	%	%		
Superintendent	6.4	14.9	36.2	34.0	8.5	3.23	1.03

32. A cooperative purchasing process with other districts.

	<b>Not at All</b>		<b>Moderately</b>		<b>Extensively</b>	<b>M</b>	<b>SD</b>
	%	%	%	%	%		
Superintendent	17.0	21.3	21.3	25.5	14.9	3.00	1.34

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

	<b>Not at All</b>		<b>Moderately</b>		<b>Extensively</b>	<b>M</b>	<b>SD</b>
	%	%	%	%	%		
Superintendent	4.3	12.8	25.5	44.7	12.8	3.49	1.02

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

	<b>Not at All</b>		<b>Moderately</b>		<b>Extensively</b>	<b>M</b>	<b>SD</b>
	%	%	%	%	%		
Superintendent	12.8	29.8	44.7	12.8	0.0	2.57	0.88

35. Recommendations from sales representatives.

	<b>Not at All</b>		<b>Moderately</b>		<b>Extensively</b>	<b>M</b>	<b>SD</b>
	%	%	%	%	%		
Superintendent	2.1	40.4	44.7	12.8	0.0	2.68	0.73

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

	<b>Not at All</b>		<b>Moderately</b>		<b>Extensively</b>	<b>M</b>	<b>SD</b>
	%	%	%	%	%		
Superintendent	0.0	0.0	12.8	63.8	23.4	4.11	0.60

37. Recommendations from other districts or consultants.

	<b>Not at All</b>		<b>Moderately</b>		<b>Extensively</b>	<b>M</b>	<b>SD</b>
	%	%	%	%	%		
Superintendent	0.0	10.6	21.3	53.2	14.9	3.72	0.85

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

	<b>Not at All</b>		<b>Moderately</b>		<b>Extensively</b>	<b>M</b>	<b>SD</b>
	%	%	%	%	%		

Superintendent	0.0	14.9	36.2	38.3	10.6	3.45	0.88
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39. Recommendations or ratings on an informational website (please specify which).

	Not at All		Moderately		Extensively	M	SD
	%	%	%	%	%		
Superintendent	34.8	8.7	43.5	10.9	2.2	2.37	1.14

40. Pilot tryouts of products within the district.

	Not at All		Moderately		Extensively	M	SD
	%	%	%	%	%		
Superintendent	2.1	4.3	29.8	38.3	25.5	3.81	0.95

41. Products with the lowest cost.

	Not at All		Moderately		Extensively	M	SD
	%	%	%	%	%		
Superintendent	8.5	23.4	44.7	21.3	2.1	2.85	0.93

42. "Bundled" products (both software and hardware together).

	Not at All		Moderately		Extensively	M	SD
	%	%	%	%	%		
Superintendent	0.0	29.8	34.0	34.0	2.1	3.09	0.86

43. Other (please specify and rate).

	Not at All		Moderately		Extensively	M	SD
	%	%	%	%	%		
Superintendent	90.6	0.0	6.3	3.1	0.0	1.22	0.71

**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.

	Not helpful at all		Moderately helpful		Extensively helpful	M	SD
	%	%	%	%	%		
Superintendent	0.0	0.0	17.0	44.7	38.3	4.21	0.72

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

	Not helpful at all		Moderately helpful		Extensively helpful	M	SD
	%	%	%	%	%		
Superintendent	0.0	4.3	17.0	44.7	34.0	4.09	0.83

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

	Not helpful at all		Moderately helpful		Extensively helpful	M	SD
	%	%	%	%	%		

Superintendent	0.0	2.1	19.1	34.0	44.7	4.21	0.83
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47. Guidelines for best practices by individual district stakeholder groups (administration, businesses, end-users, etc.).

	Not helpful at all		Moderately helpful		Extensively helpful	M	SD
	%	%	%	%	%		
Superintendent	0.0	0.0	17.0	53.2	29.8	4.13	0.68

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

	Not helpful at all		Moderately helpful		Extensively helpful	M	SD
	%	%	%	%	%		
Superintendent	2.1	2.1	23.4	38.3	34.0	4.00	0.93

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

	Not helpful at all		Moderately helpful		Extensively helpful	M	SD
	%	%	%	%	%		
Superintendent	4.3	2.1	27.7	38.3	27.7	3.83	1.01

50. Standard contract language developed by a respected third party.

	Not helpful at all		Moderately helpful		Extensively helpful	M	SD
	%	%	%	%	%		
Superintendent	2.1	10.6	23.4	38.3	25.5	3.74	1.03

51. Other (please specify and rate).

	Not helpful at all		Moderately helpful		Extensively helpful	M	SD
	%	%	%	%	%		
Superintendent	81.3	0.0	0.0	6.3	12.5	1.69	1.47