Pearland Technology Vision

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Plan Development Process

The implementation of a robust technology plan is only possible when all parties have a voice in the process. During the development of this vision, stakeholders from throughout the district had input in crafting the plan. Meetings, both face-to-face and virtual, took place throughout the summer and fall of 2021. These sessions explored best practices, the current district reality, and the challenges that lie ahead. During this process, it was determined to create a blueprint that was both aspirational and practical in nature, and most importantly, a plan that transcends audience in its understandability.

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Essential Terms/Key Concepts

Learning Management System

The district utilizes two learning management systems (Seesaw and Canvas). These digital systems are communication tools between students, families, and teachers. They provide insight to the teaching and learning occurring in classrooms, and they allow ease of access to curriculum and instructional materials for students and staff. Learning management systems also are used for maintaining resources, classroom assessment, and supporting executive functions like organization and time management.

Personalized Learning

Technology can play a key role in helping all students to have a more personal learning experience. Personalized learning is a set of intentional learning practices designed to help students maximize their achievement. Technology plays an important role in personalizing learning as it gives teachers efficient methods and tools to group and cluster learning for individual and small groups.

Technology Integration

Successful technology integration is achieved when the use of technology helps the students to effectively reach their goals, supports curricular goals, is routine and transparent, and accessible and readily available for the task at hand. In addition, it occurs when all learners have access to resources and are empowered to use all available technology in a balanced and intentional manner to enhance learning for all.

Data Systems Integration/Privacy/Utilization

Data systems play a variety of roles. Before they can be used for learning, they must maintain a high level of data privacy to protect the sensitive information maintained by schools. Once achieved, data systems consolidate information from a variety of sources with the ultimate goal of streamlining information for safe and efficient use by students, staff, and families.

Cybersecurity

Schools and districts have a primary role of providing a safe learning environment. This now extends to the digital learning environment as well. Cybersecurity is providing the safest environment for our students and staff in the digital world. When these systems are effective, they appropriately balance access with protection and limit any unauthorized use of electronic data throughout the district.

Technology Infrastructure

Technology infrastructure includes the fundamental platforms to provide access to technology resources. Examples include: switches, servers, network cabling, hotspots, teacher and student devices. Technology infrastructure is often seen as successful when it is reliable to the point of going unnoticed, but its quality dictates the effectiveness of all programming that relies on its speed and capacities.

Executive Summary

Vision for Pearland ISD Technology

Pearland ISD acknowledges the ever-increasing influence of technology on learning and within all aspects of society. These realities create an urgency to design our technology systems to be robust and sustainable. Doing so will allow students, staff, graduates, and the community to benefit from the powerful learning available when using technology in meaningful ways. To achieve this, we must craft all aspects of technology in the district to be reliable, secure, relevant to learning, and simple to use by all. The effective integration of technology by Pearland ISD will require the cooperation of all departments as technology is now a part of everything that occurs in the district.

Technology used to its potential can activate learning, provide access to the best resources and ideas available, and individualize instruction so that students are engaged and empowered throughout their learning career. Students with access to technology will leave Pearland ISD equipped with the modern skills of creativity, collaboration, communication, and critical thinking. The rapid transformation of teaching and learning is only possible when technology plays its essential role in the modern learning environment.

While the vision attempts to cover a wide range of areas in Education and Technology, there are areas that need special consideration.

- Access to technology resources, from broadband to devices and services, is an ongoing concern. With a greater integration of technology in the learning environment, access across the district will be critical to student success.
- Virtual learning options are not a temporary solution, but an important part of the learning environment that students will experience throughout their education and careers.
- Device availability, through our current 1:1 computing program and any forms it may take in the future, is critical in providing students the tools they need to succeed throughout their educational journey.

A focus on the skills and mindsets of all participants is an ongoing effort. This includes students, teachers, staff, and families. Providing opportunities for teachers to expand their skillset includes both initial training and ongoing support. As more technology goes home, expanding that training will be important to support students and their families, for both greater success in learning and knowledge of how to get support.

Measuring success is important in all areas, including student success, teacher abilities, and overall plan progression. Test scores are important, but we also need to look at other metrics. These include district trust and confidence in technology systems, overall access to devices and services, student essential skills, classroom usage of technology, and general impact on learning.

As this vision is realized, look for the following areas to emerge as excellent.

- Greater data and systems security
- Deeper cross platform connections
- Easier flows of information
- Enhanced trust in systems and support of systems
- Wider adoption of technology usage

The goals developed are grouped into the following categories, with strategic and tactical goals associated with each.

Summary of Goals

Goal 1- Applying Technology Tools to Meet All Needs
Curate and utilize technology tools through curriculum enhancement as an integral part of the educational process.

Goal 2- Crafting Modern Learning Through Technology Usage
Integrate technology within content specific and content neutral areas for students and teachers to construct learning collaboratively in authentic ways to elevate learning.

Goal 3- Providing High Quality Technical Support
Focus on resolving classroom and campus technical issues in the fastest, most cost-effective, and efficient manner.

Goal 4- Enhancing and Connecting Data Systems
Streamline connections across multiple applications and systems, creating consistent and easily reportable data.

Goal 5- Designing Data Experiences to Support Learning
Develop and maintain a district-wide data ecosystem to foster decision-making through reliable information that is readily available.

Goal 6- Supporting Student Accessibility & Neurodiversity
Remove all barriers for students with learner variabilities by providing individualized opportunities using technology.

Goal 7- Designing Stable and Flexible Infrastructure
Provide services that can scale to meet the district's needs, proactively providing advanced capabilities.

Goal 8- Maintaining Safe and Reliable Systems
Stay informed and be prepared for cyber threats, design systems to be resilient and respond automatically, and prepare for all business-critical systems to be available to avoid disruptions.

Section 1: State of Technology in Pearland

Technology Growth in Pearland

The past five years have seen tremendous growth in the introduction and use of technology by students and teachers. This growth was accelerated during the 2020-21 school year because of the conditions created by the COVID-19 pandemic. One result of this season of technology use acceleration has been a growth in confidence by teachers and students about how technology can be used to better the recipe for classroom learning. Since the last plan was written, five years ago, the district has moved to a 1:1 student-to-computer ratio, found new ways to provide families with access to robust broadband in their homes, and built an infrastructure that can handle the innovative use of technology, both now and into the future.

All these accomplishments remain active initiatives that require the personnel and funding to maintain their transformative power over time. The implementation of the previous technology plan resulted in many smaller success stories for all involved in learning throughout the district. Some of these include:

- Additional robotics programming in schools
- Increased targeted technology use for the youngest learners.
- More data privacy across all systems
- Well-designed training programs for teachers
- New awareness for when to use and not use technology
- Automation of processes to save instructional time
- Greater use of video and multimedia tools

More resources than ever are available to more students, teachers, and families because of the dedication to the implementation of the previous technology plan. These resources, coupled with the power of our learning management system and the clarity of the teacher and student proficiencies around the skills and mindsets needed for modern technology usage, place the district on a trajectory for excellence and push for this plan to raise expectations around quality technology integration moving forward.

The Future of Technology in Schools

There has never been a time when so many areas of technology are set to disrupt schools, learning, work, and how we move through life. This reality makes technology integration an essential element of all future learning. In the next decade, the disruptive nature of virtual reality, augmented reality, the internet of things, machine learning, and artificial intelligence will be tremendous. We will have new ways to deliver 5G broadband to all places through a cornucopia of devices, and tools once reserved for a few students will expand to impact the learning of most students. This includes: accessibility tools that support reading and math instruction, distance learning opportunities including the platform and content catalogue, and where students learn as learning environments are modernized and more students learn from beyond the classroom. All these factors, considered by the plan design committee, allowed for the chosen goals of this plan to emerge.

Current Opportunities for Growth

The rapid expansion of technology over the last five years has created much to celebrate, but it has also showcased the need for additional planning so that systems, structures, policies, and procedures can sustain and prosper over time. As the planning team listened to all stakeholders that are impacted by technology throughout the district, they had messages of praise for the hard work of all involved, and they asked for additional future focus in these areas.

- Make systems easier to navigate and more interconnected
- Work together between departments to have common pathways
- Provide consistent, high-quality training for all
- Create clear expectations about the usage of technology in all areas
- Proactively consider creative ways to fund technology in the district
- Help everyone break any bad habits that arose during pandemic learning
- Reduce delays in providing technical support
- Craft a future device plan that maintains quality over time

These areas are an honest account of some of the current challenges, but they also demonstrate that much of the foundational work has been done district wide. This plan isn't designed to salvage a struggling system, but to bolster the foundation and pursue the excellence that has been seen in other districts around the state and country that have maintained high quality technology integration as a priority.

Future Areas of Challenge for Technology in Schools

Along with challenges mentioned above, the technology plan design committee looked at research, the work of other districts, and other areas of the school district operations impacted by technology, so that they could develop a proactive list of future challenges that could emerge for the district as it relates to the success of the goals outlined in this project. This list isn't comprehensive, but it should continue to find itself in reference as the plan is initiated and reviewed over the next few years.

- Technology has played a role in extending learning gaps in some places.
- Technology in schools is under increasing cybersecurity threats.
- Technology can be built with inherent bias.
- Technology, used poorly, leads to negative learning outcomes.
- Technology will change, causing a need for quick, accurate pivots.

Each of these areas are emerging conversations for schools and districts around the country, and though they may not explicitly factor into the goals of this plan, it is essential that we don't allow them to be a blind spot as the plan is executed over the next few years. Technology, with all its promises to individualize and personalize learning, is an inherently neutral actor that requires intentional designs throughout the organization to maintain its positive impact. Students throughout the district are growing in new and exciting ways when it comes to their skills and mindsets with technology, and it is essential that we remove the barriers that can inhibit their growth and development in integrating technology into their lives.

Existing Technology

Educational Technology:

- iPads are available for all PK – 1st grade students.
- Windows-based laptops are available for all 2nd-12th grade students.
- Seesaw is the learning management system (LMS) used for PK-4th grades.
- Canvas is the LMS used for 5th-12th grades.
- Each classroom is equipped with a teacher computer, interactive short-throw projector, document camera, a teacher tablet device, and at least 2 student computers.
- Computer labs, laptop carts, and iPad carts are available for specialized student use.
- Educational technology support is provided by the Educational Technology Specialists through coaching, mentoring, co-teaching, and training.

Applications and Data:

- Skyward is the student information system, installed on-premises at the ESC.
- Skyward and Munis are critical systems identified to be restored at our disaster recovery center in the event of an emergency.
- Munis is the district financial system.
- Our data-warehouse connects multiple systems for allowing reporting across many separate systems.
- The data-warehouse is refreshed nightly from all connected systems.
- Our SFTP server transfers files nightly for many of our online resource vendors to ensure that all online resources stay current with our student information system.
- Our two web servers house several of our custom applications we have developed for the district all using secure connections. (HRS Portal, Student Transfers, etc…)

Support:

- There are 19 Tier 1 technicians across the 23 campuses of Pearland ISD.
- There are 6 Tier 2 technicians acting as team leads for campus support.
- There are 14 Educational Technology Specialists (ETS) on campuses.
- There is 1 Learning Technology Administrator who supports all students and teachers in grades 5-12 with Canvas.
- There are 2 educational technology specialists who share administering Seesaw for grades PK-4 along with their educational technology specialist duties.
- Eduphoria's Help Desk module is used for ticketing; it does not have an asset management system.
- There are 46 different services listed in the Eduphoria Service Catalog.

Infrastructure/Network:

- SETG Internet connection, established at two locations; provides 2x20GB connections at each location for a total of 40GB of bandwidth; we can burst to 100GB, based on our agreement with SETG. Limitations are tied to old network equipment, including switches and firewalls that are at end-of-life and transceivers that are limited in bandwidth.
- Current production server environment is located on-premises, and we will investigate having a cloud presence to achieve a hot standby configuration for disaster recovery purposes.
- Avaya is our current phone system. We are in the last year of a seven-year lease.
- Layer 2 / 3 (Switches and Routers) network gear at various campuses/sites are reaching end-of-life which we would need to implement a phased approach in replacing this network gear.
- Current home folders and shared drives for staff are located on virtual servers on-premises.
- Production backup jobs are hosted on premises and Office 365 backups are non-existent. We are looking into what would be needed to replicate our current backup jobs and to start backing up Office 365 data to a cloud-based backup solution.
- Wi-Fi Infrastructure is running Wi-Fi 6 (802.11ax), which is the latest Wi-Fi standard as of September of 2021 when this draft was created.
- Disaster Recovery center is located at Socorro ISD's data center in Socorro, TX, as a partnership arrangement with that district.
- Student e-mail accounts are hosted with Office 365, while staff e-mails are hosted on-premises at the ESC. A migration effort is underway to move staff e-mail to the Office 365 environment.
- HPE Nimble Storage Arrays runs our whole enterprise. We have four (4) Nimble Storage Arrays groups. The production group has a total of 246.2 TB of space, and they reside on three (3) All-Flash arrays. The video group has a total of 153.53 TB of usable space, and it resides on one (1) Hybrid Array (Flash and spindle hard drives). The backup group is composed of two geographical locations. There is one (1) array in Pearland with a total of 91.80 TB of usable space, and one (1) array located in our Disaster Recovery site at Socorro, TX with a total of 122.67 TB. Both are Hybrid arrays. Finally, The ALE group has a total of 7.26TB of usable space and resides on an All-Flash array. All groups together make a total of 621.46 TB of usable space.

Section 2: Key Areas of Consideration

Overview

Major shifts in technology in education continue to accelerate. This includes hardware, software, and the learning that can emerge from quality technology use. These shifts require change from all school districts. The current systems that surround the use of technology must continue to adapt quickly to first, make sure that students and staff aren't left with ineffective tools to learning, and second, reach the mission and vision of excellence expected throughout the community. Three of these considerations are outlined in section two. There are many other areas that will also need to be funded and supported fully over the life of this plan, but the committee sees technology access, virtual/hybrid learning, and the 1:1 computing initiative as essential focus areas.

Research continues to indicate that extending learning through the use of technology, along with the opportunity to personalize and individualize learning through the use of modern technology tools, can result in greater academic achievement. Though it can be difficult to draw a direct line from technology introduction to greater learning outcomes in all areas, it has shown that asking students to learn beyond the bell without broadband, modern learning strategies for online learning, or a dedicated device can quickly contribute to learning loss, disengagement from learning and negatively impact the social and emotional welfare. The committee sees the considerations below as an antidote to these negative impacts.

Technology Access for All

Overview: The technology gap is real and growing for many families in the district. Though a variety of short-term solutions were put into place during the pandemic, including getting families hotspots, it became clear that equal access wasn't the same as equal results. For example, families with multiple students using video conferencing at the same time on a school issued hotspot have greater demands on the limited bandwidth than homes with one student. Along with broadband considerations, it remains important for the district to examine devices and software, along with supporting access for all.

Key Questions for Consideration:

- Through what systems, procedures, and processes are we potentially creating inequities?
- What best practices around technology are happening in isolation that need to be spread across the district in the name of greater access?
- What are the actual broadband needs of our families, and how can we create long-term solutions to support these needs?

Recommendations:

- Ongoing Training
- Consistent access and delivery of data safely across the spectrum of subjects
- Develop short-term and long-term home access plans for families
- Look for current classes and after-school activities offered in some, but not all, places and assess whether this needs to change or grow for more access

- Have explicit communication about the vision and mission to provide access in all areas for all students, families, and staff
- Make sure that all students, families, and staff know about the technology resources and tools available to them
- Push for greater use of tools that help with accessibility, neurodiversity, and language acquisition

Virtual/Hybrid Learning

Overview: Before the pandemic, virtual and hybrid learning options were growing in the district and around the country. The benefits of well-designed hybrid learning were noted in research as providing a more personalized approach, providing families with a greater amount of choice when it comes to paths and paces for learning. The success of virtual and hybrid learning models is based entirely on the quality of the instruction that is designed for students, plus the technology available to deliver that instruction. The committee believes that we should continue to explore robust and meaningful ways to support the growth of virtual and hybrid learning throughout the district.

Key Questions for Consideration

- Where do we currently have success in this area, and how can we build on this?
- In what ways can our learning management systems (Seesaw, Canvas) play a role in the design of high quality virtual and hybrid learning?
- How can we build a narrative to expand the understanding in the community that virtual and hybrid are keys to growing our high-quality offerings?

Recommendations

- Work across departments to make sure that content is connected with the devices and tools available for students and families.
- Grow the training opportunities for families.
- Look for ways to design some virtual and hybrid courses that can be offered as district-wide classes.
- Examine the feasibility of using hybrid and virtual learning to offer high-quality tutoring options for more students in need.
- Create a committee to look at the feasibility of a district virtual academy.
- Look for ways to expand the personalized learning opportunities in the district to maximize engagement and allow students more choices in their learning paths.
- Work with teachers to think about staff models that balance in-person, hybrid, and virtual learning.

1:1 Computing

Overview: For over a decade now, many schools and districts across the country have been providing each of their students a school-issued device. This decision, with the funding and support that follows, creates a one-to-one computing environment. Schools making the decision to move in this direction recognize the long-term commitment needed for it to be successful in garnering the results that are possible. Successful 1:1 computing environments can result in a multitude of benefits for students including: introduction to the use of technology tools and application, practice with the practical applications of technology needed beyond high school in college and careers, greater confidence in troubleshooting and solving technology issues, and access to tools that can lead to greater learning including the areas of collaboration, communication, creativity, and critical thinking.

Key Questions for Consideration:

- How will the district measure the success of 1:1 computing to accurately represent its impact on students and families?
- What other solutions exist to achieving the goals of using technology in deeper ways?
- How might we analyze the short, medium, and long-term return on investment?
- How can we learn from the decade or more of implementation from other schools and districts in this area?
- What training and support levels are necessary for success?
- What funding levels are necessary for success?

Recommendations

- 1:1 computing should continue as a top priority for the district.
- Grow the training and support levels to meet the needs of students, teachers, and families.
- Work on a sustainable supply chain so devices are available as needed.
- Investigate ways to recoup costs as it relates to damage and repairs.
- Build capacity around digital safety.
- Examine additional ways to fund 1:1 computing.
- Grow the understanding in the community around the importance of having devices for all students.
- Link additional instructional practices to high-quality technology uses.
- Develop requirements, standards, and recommendations for student use and care.
- Hire personnel to properly repair and maintain the fleet of student 1:1 devices.

Section 3: Growing Learner Capacity

Overview

The infusion of technology into classrooms and other learning systems will never reach its potential without the intentional growth of the skills and mindsets of all that participate in the learning process. This includes students, teachers, staff, leaders, and families. Each of these groups play an essential role in maximizing the investment of greater amounts of technology into the district. This section of the plan looks at the current efforts in the district around capacity building, deeper technology integration, and makes recommendations on how to expand learner opportunities to achieve the mission and goals of this plan.

Current Training and Learning Opportunities

The district provides a variety of learning opportunities for teachers around the technology tools that have been purchased for use in the district. This includes initial training and ongoing support. Teachers can get support on technology issues that are impacting their efficient use of instructional time, and they can also access support and expertise on how to utilize the technology so that it weaves into their instructional model.

The majority of the current support structures rely on the use of three chunks of available time. These are: after school learning opportunities, professional learning days throughout the year, and summer learning opportunities. Each of these windows provides teachers with time to reflect on technology use, consider new, different, or deeper integrations, and plan for how to implement new technology in subject and age-appropriate ways. Below are three highlights around learner growth and capacity building that have emerged from the work during the last technology plan.

- Focused Professional Development
- Coaching and Mentoring Opportunities
- On-Demand Learning

Modernizing Training and Learning Opportunities

The same tools that are being infused to a greater degree into learning through prior plans can and should be used to expand and grow the training and learning opportunities that are available to all throughout the district. It is now clear that training and professional learning opportunities can take on many effective forms including the use of interactive text, audio, and video. These materials can be facilitated in-person or virtually using video conferencing. Learning can also take place synchronously and asynchronously. The successful technology plan will require that all of these elements be used in a precise recipe to achieve what research says is possible when it comes to growing capacity around technology integration.

In addition to recalibrating the mix of learning opportunities to infuse greater technology into the process, it will be essential to expand the audiences that have access to technology support and training. As more technology goes home with students, it will be important to support families so that they understand the basics of devices, how to get additional support, and the major tools that are being used by

students for learning. Technology now sits central to all school systems, and it requires building level leadership to promote, maintain, and accelerate its use. This makes training for leaders an essential element of this plan. These two major additions, along with new and exciting ways to bolster learning for students, teachers, and staff, will make this plan primed for impact and allow for the best chance for the mission and goals of this plan to materialize.

Desired Technology Skills and Mindsets for Adult Learners

Lists of skills and mindsets as it relates to technology and schools are never exhaustive and continue to shift with the changing demands, but the list below highlights some of the key skills and mindsets needed for educators in Pearland ISD to make the promise of this plan a reality.

Skills

- Proficient Use of Seesaw and Canvas Learning Management Systems
- Troubleshooting Basic Hardware and Software Issues
- Finding and Curating High Quality Online Resources

Note: The district has a detailed skills rubric that goes into depth around needed skills. Teachers can use this rubric as a self-assessment and tool to select areas of exploration and growth. This tool was built as a part of the previous technology plan.

Mindsets

- Resilient
- Curious
- Problem solver
- Independent thinker
- Active Collaborator
- Flexible/Adaptable
- Patient and Compassionate
- Shows Empathy

Desired Technology Skills and Mindsets for Student Learners

As we integrate technology into more and more instructional moments in more classrooms, it leads to an acceleration of the demands on students to have the right skills and mindset around technology in classrooms and beyond. Through this plan, students will have the opportunity to grow in a plethora of skills and mindsets. We are featuring some of the key ones here with some details on why the committee sees these as essential to preparing students for their contributions to the community beyond high school.

Skills

- Program and software navigation- Though the names of the programs will change, students need the confidence and essential skills to move through learning programs.
- Online citizenship- To be able to be in discussion and discourse online requires these unique and essential skills.
- Typing and Keyboarding- More efficient use of technology is possible as these skills develop.
- Self-direction- Both a skill and a mindset. Owning our learning and making life-long learning a joy is an essential for students.
- Curator of ideas and resources- There isn't a shortage of information and data, but there is a deep need to have the skills to choose the right information in the right moments.

Note: The district currently gathers data on student technology skills. This data is used to frame new ways for technology skill development to be embedded into daily teaching and learning. As new skills and mindsets are prioritized, it will be essential that any student assessments grow and evolve.

Mindsets

- Kindness- Online and technology spaces require a unique type of kindness
- Resilient- Working through the first struggle and showing perseverance
- Curious- Wondering about big questions, noticing the normal in new ways
- Problem solver- Starts with problem identification and an interest in solution making
- Independent thinker- Synthesizing multiple perspectives and have informed opinions
- Active Collaborator- Knowing that teamwork and coming together leads to solutions
- Flexible/Adaptable- Integrating societal shifts and changes into our daily practices
- Patient and Compassionate- Entering all spaces with humility and support for others
- Empathetic- Shifts perspective to those of others for greater understanding

Section 4: Robust Success Metrics

Overview

Quality technology integration in schools shifts the behavior and achievement of students as well as prepares them for college, career, and life. To achieve these optimal outcomes, it is essential that we identify and pursue a robust set of success metrics that can showcase the nuance and complexity of the growth. This means including test scores as a part of the portfolio of metrics, but not allowing it to be the singular data point in a complex system of change. In addition to looking at achievement, we are introducing four other research-backed areas that when measured and monitored allow for districts to showcase growth over time. These include: measuring trust and confidence in the system, measuring access to devices, broadband, and other resources, measuring the skills growth of teachers and students, and measuring shifts in classroom instruction based on the priorities and emphasis areas of this plan.

Measuring Trust and Confidence

Systems don't grow when the individuals lack trust or have no confidence in them functioning effectively or efficiently. Throughout the last technology plan, actions were taken to grow trust and confidence in the system. This momentum must continue as the demands on the use of technology continue to grow, as does the complexity of the technology being used by teachers and students.

Areas of Focus

- Speed of technology support
- Quality of technology support
- Downtime for building wired and wireless internet
- Outages/systems attacks
- Availability of devices
- Access to instructional technology resources

Ways of Measuring

- Support Ticket Metrics
- Digital Security Audit
- Infrastructure Alerts
- Survey and Focus Groups

Measuring Access to Devices and Systems

Access to technology, or the lack thereof, can lead to significant learning loss for students as more and more of the daily workflow occurs with and through technology. Access begins with access at school for teachers and students. Having devices for everyone is only the start, as the quality of the device matters as well. Adding programs that demand more memory and speed requires more frequent refresh cycles to maintain high quality access. In addition to school access, it is important that students can extend their learning beyond the walls of the school, and this requires home access to high-speed internet. Along with these essential areas, accessibility also

stretches into the programs and software being used. All students need to be able to access materials no matter their current level of academic readiness.

Areas of Focus

- Refresh Cycle of Devices
- Accessibility of Software for Students with Individualized Educational Plans (IEP)
- Accessibility of Software for English Language Learner (ELL) Students
- Maintaining Device Inventory to Maximize Access
- Optimizing Computers through Their Life Cycle

Ways of Measuring

- Users on Network
- Broadband Strength at Home
- Software Usage Reports
- Hotspot Requests
- Surveys of Teacher and Student Satisfaction

Measuring Essential Skills

For students and teachers to integrate technology in more complex and innovative ways, a growing catalogue of skills must be obtained. This list of skills, that once focused on word processing, navigating the computer, spreadsheets, and slide presentations has ballooned into skills that includes students growing their digital self, as a digital agent and as a digital interactor. This pushes districts for more robust metrics that go well beyond a typing test and a basic skills assessment. The current district eighth grade technology assessment looks to capture not only the essential legacy skills, but also the critical thinking and problem solving needed by the modern technology user. It is also important that we find ways to measure the skills of teachers, staff, and leaders so that professional learning can be crafted to support their efforts to innovate with technology.

Areas of Focus

- Creation skills
- Curation skills
- Multimedia skills
- Foundational skills
- Keyboarding and typing
- Online behavior skills
- Digital safety skills

Ways of Measuring

- Authentic Digital Showcases
- Robust Assessments of Skills for Staff
- Participation in Training
- 8th Grade Technology Assessment

Measuring Effective Classroom Usage

All the work of this plan should crescendo at changes and enhancements to classroom instruction. These changes allow for students to have greater engagement as well as satisfaction in their learning. When teachers can masterfully move through their robust toolbox of technology tools with purpose with little to no loss of instructional time, learning is efficient and effective. High quality use in the classroom should allow a more personal learning experience and one that allows more students to achieve deeper learning.

Areas of Focus

- Student Collaboration with Technology
- Students Learning Within and Beyond the Classroom with Technology
- Teachers Weaving a Diversity of Resources into the Classroom
- Teacher Extending Learning Beyond the Classroom with Technology
- Greater Content Creation for Staff and Students

Ways of Measuring

- Usage Reports
- Learning Walks
- Clever Statistics
- Looking at Classroom Instruction through Transformation Lens
- Survey and Focus Groups,

Measuring Impact on Learning

No initiative in education is free from the goal of raising achievement, and this is true for the work to integrate technology more deeply into the fabric of teaching and learning. Technology is a series of tools that can make learning more efficient, effective, and exciting, and each of these 3Es create the conditions for greater academic achievement. This plan recognizes that its effectiveness must be measured in a variety of ways, but one must include supporting the mission to grow students academically.

Areas of Focus

- Programs to support students with academic gaps
- Tools that ease communication and access to information
- Supplemental tools to support math and reading

Ways of Measuring

- District Formative Assessments
- State Level Assessments

Section 5: Goals and Action Plans

Overview

This plan will focus on the eight goals outlined in this section. Each of these goals overlaps and interweaves with each other. Notice four areas of goals emerge:

- The first area includes Learning Goals. They are foundational to the success of the plan. Changing systems, policies, procedures, and buying things mean nothing unless the learning emerges stronger, changed, and more robust.

- The second area is Network and Infrastructure. A strong core is essential for the long-term success of any district technology plan. These goals focus on upgrading systems, building systems life cycles, and maintaining network safety.

- The third area is Data and Systems Integration. Adding technology requires integration, including finding ways to access the data in multiple systems and logging in to systems with ease. These goals look to grow this area throughout the district to make technology and information access more effective and efficient.

- Finally, there are goals that focus on technology support for teachers, students, and families, and a focus on using technology to close learning gaps and support learners with greater learning needs.

Technology Goals

Goal 1- Applying Technology Tools to Meet All Needs
Curate and utilize technology tools through curriculum enhancement as an integral part of the educational process.

Goal 2- Crafting Modern Learning Through Technology Usage
Integrate technology within content specific and content neutral areas for students and teachers to construct learning collaboratively in authentic ways to elevate learning.

Goal 3- Providing High Quality Technical Support
Focus on resolving classroom and campus technical issues in the fastest, most cost-effective, and efficient manner.

Goal 4- Enhancing and Connecting Data Systems
Streamline connections across multiple applications and systems, creating consistent and easily reportable data.

Goal 5- Designing Data Experiences to Support Learning
Develop and maintain a district-wide data ecosystem to foster decision-making through reliable information that is readily available.

Goal 6- Supporting Student Accessibility & Neurodiversity
Remove all barriers for students with learner variabilities by providing individualized opportunities through the use of technology.

Goal 7- Designing Stable and Flexible Infrastructure
Provide services that can scale to meet the district's needs, proactively providing advanced capabilities.

Goal 8- Maintaining Safe and Reliable Systems
Stay informed and be prepared for cyber threats, design systems to be resilient and respond automatically, and prepare for all business-critical systems to be available to avoid disruptions.

District Strategic Goals

Goal 1: Pearland ISD will continue to make student academic performance its top priority, through data, technology, and differentiated instruction.

Goal 2: Pearland ISD will support the physical and mental health of all students and staff.

Goal 3: Pearland ISD will provide a transparent communication system that fosters trust and enhances unity across the district and community.

Goal 4: Pearland ISD will strategically maximize financial assets to provide resources to meet student needs in partnership with families and the greater community.

Goal One: Applying Technology Tools to Meet All Needs

Goal Statement: Curate and utilize technology tools through curriculum enhancement as an integral part of the educational process.

Goal One Tracking:

Strategy Description	District Goal	Expected Result	Year 1	Year 2	Year 3
Students will use a Pearland ISD 1:1 device as a district standard.	1	Technology and Curriculum will work together to incorporate devices into educational approach of the district.	X		
Assess training needs for teachers on an ongoing basis and provide training	1	Increase teacher proficiencies; increase attendance in training classes. Teachers should know where to access just-in-time training.	X		
Students will use a variety of technologies to improve their digital citizenship, critical thinking skills, and technology applications literacy.	1	Better support will be available for students who use district-provided devices; Testing will have options for online testing.	X		
Utilize learning management systems for course delivery for all students to address flexibility in teaching and learning.	1	All teachers will have all course content in Canvas or Seesaw; students will have the ability to access content from any location.	X		
Provide necessary charging resources for classrooms and areas of instruction	1, 4	Ensure that devices used in classrooms and for testing will be able to function throughout the school day.	X		
Support the integration of Grades K-8 Technology TEKS and ISTE standards into the core curriculum areas by providing planning, curriculum writing, training, follow-up, and assessment.	1	Collaboration between all instructional areas for seamless technology integration within the curriculum. Aligns district with TEKS standards.	X		
Provide opportunities for curriculum writing to develop technology enriched lessons that ensure a balanced approach between technology and resources	1	Create greater alignment between Technology and Curriculum departments.	X		
Develop and provide one dashboard for all digital resources as a one-stop-shop for all technology tools that students must access.	1	Students have one location for all resources.		X	
Develop and maintain teacher technology proficiencies for state compliance tied to TTESS.	1	All teachers will complete their teacher technology self-assessment and identify areas for growth.	X		

Develop and maintain administrator technology proficiencies.	1	Campus-level administrators will complete their self-assessment and identify areas for growth.		X	

Staff responsible for monitoring: Director of Educational Technology, Educational Technology Specialists, Learning Technology Administrator, Directors of Instructional Programs, C&I Specialists

Evaluation data sources: 1:1 device inventory and check-out data/reports, lesson plans, technology proficiency documents, training schedules and rosters.

Goal Two: Crafting Modern Learning Through Technology Usage

Goal Statement: Integrate technology within content specific and content neutral areas for students and teachers to construct learning collaboratively in authentic ways to elevate learning.

Goal Two Tracking:

Strategy Description	District Goal	Expected Result	Year 1	Year 2	Year 3
Develop greater teacher autonomy for implementing technology tools within the classroom with vetting requirements.	1	Teachers will use the tools available and expand their toolkit by working with their educational technology specialist.	X		
Continue to conduct summer professional development academies with a focus on technology integration and utilization.	1	Greater attendance and broader implementation of technology integration because time spent during summer allows for reflection and purposeful planning.	X		
Provide just-in-time training for students to learn how to navigate their 1:1 device.	1	Online resources are expanded for student support.	X		
Implement learning walks for teachers and leaders district wide.	1	Administrators and teachers are able to learn from teachers who have embraced innovative ways to integrate technology.		X	
Have collaborative design sessions between curriculum and instruction and technology to determine expectations on technology integration	1	District standards are set to improve technology implementation in the classroom.		X	
Grow overall learner engagement through technology	1	Lessons are developed with flexibility for student choice and student voice.		X	
Provide an environment where new technologies can be tested and vetted before being implemented in the classroom.	1	Provide a location to test technology to be used in classrooms without disrupting live environments.		X	
Form committee to explore virtual education options for the district.	1	Recommendation for how to proceed with virtual learning and who should be the target audience.	X		

Staff responsible for monitoring: Director of Educational Technology, Educational Technology Specialists, Learning Technology Administrator, Directors of Instructional Programs, C&I Specialists

Evaluation data sources: Training schedules and rosters.

Goal Three: Providing High Quality Technical Support

Goal Statement: Focus on resolving classroom and campus technical issues in the fastest, most cost-effective, and efficient manner.

Goal Three Tracking:

Strategy Description	District Goal	Expected Result	Year 1	Year 2	Year 3
Establish endpoint technology lifecycle plan	1, 4	Keep endpoint technology up to date, while providing a consistent financial plan for replacements	X		
Develop and maintain a service level agreement in which all technicians provide quality customer service in a timely manner.	1	All campuses have awareness of expectations of customer support and follow processes for efficient and effective response times.		X	
All technicians will receive training for specific required and optional certifications.	1	Technology staff are high quality, certified technicians.	X		
Update Service Catalog to better represent district needs and be more accessible	1	A streamlined list of services that are easy to understand and find, leading to quicker and more complete submission of incidents and requests, and subsequently faster response times from Technology staff.	X		
Implement new Information Technology Service Management (ITSM) solution	1	More efficiency from Technology staff, better visibility for end users, and better reporting.		X	
Increase support personnel to provide a Tier-1 technician at each campus	1	Faster response times; more support for 1:1 devices, including repairs, distribution, and collection		X	

Staff responsible for monitoring: Director of Educational Technology, Technicians, Desktop Support Manager, and Desktop Support Engineers.

Evaluation data sources: Reports from work order system, certification documentation, service level agreements

Goal Four: Enhancing and Connecting Data Systems

Goal Statement: Streamline connections across multiple applications and systems, creating consistent and easily reportable data.

Goal Four Tracking:

Strategy Description	District Goal	Expected Result	Year 1	Year 2	Year 3
Ensure that all systems have integration capabilities, either an open API or other means, for seamless integration with the student information system.	1, 4	Keeps all external resources current with student information system data changes. Enables enforcement of system of record for all student data.	X		
Asset/Inventory Systems connect to both student information system and financial system.	4	Provide proper tools to track inventory and data, connecting relevant systems for financial impact to district and students.		X	
Develop Project Intake Process and a service level agreement for custom integrations and/or custom programs.	4	Streamline district projects and timelines, to ensure resources are properly allocated to meet deadlines.	X		
Increase Single-Sign-On (SSO) capabilities	1	Removes barriers from students and staff to streamline daily activities.	X		
Improve data warehouse refresh frequency	1	Current 24-hour refresh of warehouse is improved, to increase efficiency of staff utilizing data.			X

Staff responsible for monitoring: Director of Development and Data Management, Director of Information Security

Evaluation data sources: Reports, service level agreements

Goal Five: Designing Data Experiences to Support Learning

Goal Statement: Develop and maintain a district-wide data ecosystem to foster decision-making through reliable information that is readily available.

Goal Five Tracking:

Strategy Description	District Goal	Expected Result	Year 1	Year 2	Year 3
Use systems of record, such as Skyward and Munis, to track student, faculty, and staff information.	1	Keep all information accurate and up to date, with no duplication of data in shadow systems.	X		
Automate On Data Suite connection to student information system.	1, 4	District can rely on system to be up to date on a regular schedule, not relying on one staff member to manually update.		X	
Provide parent and student web access to necessary information through the Skyward Family Access and district learning management systems (Canvas and Seesaw).	1	All users access Skyward and the learning management systems to receive pertinent information. Parents/guardians can see grades and progress of their students.	X		
Train appropriate faculty and staff on use of grade book and attendance program for interfacing with district student information system.	1	All faculty and staff use the student information system for grades and attendance as required.	X		
Support users (teachers and administrators) who implement Aware for online assessments and data disaggregation, along with state level testing.	1	Teachers and administrators use Aware for disaggregating data for student growth and have support during all online testing.	X		
The student information system is used to inform parents of technology issues, pertinent information, or emergency outages.	1	Information is communicated in a timely manner from technology to the district stakeholders.	X		
Use reporting features within district software to make informed decisions.	1	Reports will provide information to assist in data-driven decision-making.	X		

Staff responsible for monitoring: Director of Development and Data Management, Director of Educational Technology, Learning Technology Administrator, Student Data Specialists

Evaluation data sources: Reports, and training rosters

Goal Six: Supporting Student Accessibility & Neurodiversity

Goal Statement: Remove all barriers for students with learner variabilities by providing individualized opportunities through the use of technology.

Goal Six Tracking:

Strategy Description	District Goal	Expected Result	Year 1	Year 2	Year 3
Provide student access to assistive technology devices, online tools, including immersive readers and annotative PDF documents, and services if needed to meet IEP goals and objectives.	1	Students have access and can use the technology available.	X		
Advise and train appropriate staff on use of adapted software and devices as needed and upon request.	1	All staff are trained on software and hardware and can support students.	X		
Train parents/guardians on appropriate hardware and software that is sent home with the students.	1	Parents/guardians are trained and know where to find just-in-time information for support.	X		
Provide opportunities and resources for students to collaborate worldwide in Advanced Academics Capstone classes.	1	Students and teachers work with leaders in various fields.	X		

Staff responsible for monitoring: Director of Educational Technology, Educational Technology Specialists, Director of Special Programs, Special Programs Specialists, Director of Advanced Academics, Advanced Academics Specialists.

Evaluation data sources: Eduphoria training rosters, training schedules, and inventory of assistive technology.

Goal Seven: Designing Stable and Flexible Infrastructure

Goal Statement: Provide services that can scale to meet the district's needs, proactively providing advanced capabilities.

Goal Seven Tracking:

Strategy Description	District Goal	Expected Result	Year 1	Year 2	Year 3
Increase Unified Communications capabilities as we approach end-of-life of our current telecom equipment.	3, 4	Tie all communications, including phone, e-mail, instant messaging, etc., through one solution to increase usability and collaboration.			X
Increase bandwidth to support increased Internet utilization across district	1	Double bandwidth available; district currently has 2x20GB secured connections. We can burst to a total of 40GB today; doubling capacity at the firewall will allow for 2x40GB with a burst capacity of 80GB.		X	
Increase bandwidth on and between campuses and support sites	1	Monitor and increase Wi-Fi bandwidth; improve connectivity between sites.			X
Implement global monitoring solution	1	A "single pane of glass" to be able to monitor all network, server, and account activity from one location.	X		
Shift to a cloud-first model	1, 4	All new services will be considered as a cloud-based option first, along with examining current services for eventual migration to the cloud as appropriate.	X		
Establish power monitoring and management of endpoints	4	Reduce power usage to reduce overall cost of technology, without impacting usability.		X	
Setup universal print monitoring and reporting for all network and standalone printers	4	Reduce printing, making use of online collaboration tools, resulting in less paper and less toner purchased and used.		X	

Staff responsible for monitoring: Director of Information Security, Network Manager, CTO

Evaluation data sources: Monitoring system logs and data usage.

Goal Eight: Maintaining Safe and Reliable Systems

Goal Statement: Stay informed and be prepared for cyber threats, design systems to be resilient and respond automatically, and prepare for all business-critical systems to be available to avoid disruptions.

Goal Eight Tracking:

Strategy Description	District Goal	Expected Result	Year 1	Year 2	Year 3
Implement Multi Factor Authentication for district staff	4	Increase security by implementing MFA solution across all platforms for staff.	X		
Implement Multi Factor Authentication for students	4	Increase security by implementing MFA solution across all platforms for students.		X	
Improve Business Continuity - server infrastructure	1, 4	Add presence with cloud provider for emergency failover.	X		
Improve Business Continuity - connectivity	1, 4	Add a third connectivity path for Internet traffic for redundancy.	X		
Improve Business Continuity - data	1, 4	Add/augment backup storage with cloud provider.		X	
Increase endpoint analysis and monitoring for end user safety	1, 2	Implement/update/replace monitoring solutions to analyze all cyber activity		X	
Redesign and implement new network structure for more resilience and reliability	1, 4	The loss of any location will not impact network traffic flow across the district.		X	
Focus on security for student information system (Skyward)	1	Create separation of the public target of attacks (the website) from the primary application and data.	X		
Establish 24/7 security monitoring of critical systems	4	Through outsourcing, increase visibility, identify vulnerabilities, and improve reaction time in the event of an incident.	X		

Staff responsible for monitoring: Director of Information Security, Network Manager, Director of Development and Data Management

Evaluation data sources: Monitoring systems security logs and data

Appendix A-Infrastructure Spending Plan

Network Infrastructure		2021-22	2022-23	2023-24	2024-25	2025-26
	Fortinet firewalls (2)			406,000		
	Extreme Networks Campus Layer 3 remote routers (23)		11,000			
	Extreme Networks Campus Layer 2 IDF switches (542)			675,000	675,000	675,000
	Extreme Networks core aggregation switches (4)		64,000			
	District wireless network: *These network components were deployed in 2021.*					
	Aruba WiFi access points					
	Aruba WiFi controllers					
	Aruba NAC					
	Aruba Layer 2 switches					
	Phone system upgrade			500,000		
Server/Storage Infrastructure						
	VDI blades (64)			250,000	250,000	
	Production servers (2)			8000	8,000	
	Production blades (14)			90,000	90,000	
	HP/Nimble storage array				297,000	
	Security system blades (4)			16,000	16,000	
	Security system storage – *Dell Unity storage*					
Disaster Recovery Site						
	DR site blades (3)			12,000	12,000	
	DR site storage – HP/Nimble			300,000		
	SonicWall firewall – *end-of-life is past 2026*					
	Extreme Layer 3 switch			16,000		
	Extreme Layer 2 switch – *will be replaced by layer 3 switch*					
Client Endpoints						
	1:1 Devices	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
	Staff computers	750,000	750,000	750,000	750,000	750,000
	Staff printers	100,000	100,000	100,000	100,000	100,000
Classroom Technology						
	Teacher tablets/PC's	120,000	120,000	120,000	120,000	120,000
	Administrator tablets/PC's	20,000	20,000	20,000	20,000	20,000
	Campus computers		1,377,959	1,049,318	1,065,677	500,000
	Classroom projectors				1,250,000	1,250,000
	Document cameras				102,000	102,000
	Computer casting/mirroring	125,000	125,000	125,000	125,000	125,000

Appendix B-Annual Software/Hardware Renewals

Reseller	Vendor	Product	Description	Annual Cost
Advanced ToolWare	Tools4Ever	UMRA	Renewal—account creation/deletion automation	13,093
ARIN	ARIN	Registration	Annual renewal	300
Autodesk	Autodesk	AutoCAD	Annual subscription	1,775
CBT Nuggets	CBT Nuggets	Learner training	Training subscription	5,990
Cellco	Verizon	Hotspots	Hotspots for student internet	120,600
Character Strong LLC	Character Strong LLC	Character Strong	Character development software	25,188
CRW	CRW	Consulting	E-rate filings	4,250
Data Management	Data Management	Timeclock Plus	Annual renewal	13,249
Data Management	Data Management	Data processing	Annual renewal	36,420
Dell	Bomgar	Remote Support	Annual renewal	32,782
Dell	Citrix	Xendesktop	VDI renewal	125,570
Dell	F5	Load Balancer	Annual renewal	95,989
Dell	Printerlogic	Printerlogic	Print management renewal	14,684
Dell	SonicWall	Firewall	DR center firewall renewal	17,012
Dell	VMWare	VMWare licensing	Phone system server renewal	6,638
Dell	Nvidia	Grid	Annual renewal	4,116
Edgenuity	Edgenuity	Edgenuity	Annual renewal	114,980
Eduphoria	Eduphoria	Lead4ward	Annual renewal	8,850
Eduphoria	Eduphoria	Eduphoria subscription	Annual renewal	39,848
Frontline	Frontline	Absence & Substitute Management	Annual renewal	36,683
Frontline	Frontline	Central solution	Annual renewal	45,073
ImageNet	Canon	Copiers	Lease	5,704
Infobase (Hoonuit)		Learning Cloud-Educate	Annual renewal	1,200
Instructure	Instructure	Canvas	Annual renewal	93,310
Instructure	Instructure	Canvas additional users	4000 additional users on account	25,960
IPC	Aruba	Wireless	Annual renewal	49,018
IPC	Aruba	Clearpass NAC	Annual renewal	17,766
IPC	Avaya	Phone system	Annual maintenance	123,411
IPC	Barracuda	Archiver	Annual subscription	21,920
IPC	Ekinops	DWDM	Maintenance renewal	3,245
IPC	Extreme	Network switches	Maintenance renewal	57,772
IPC	Fortinet	Network firewall and services	Maintenance renewal	279,162
IPC	Juniper	BGP Router	Annual renewal	7,601
Journeyed	Adobe	Adobe licensing	District license renewal	12,300
PhonoScope	PhonoScope	IP TV Converter	Annual renewal	1,960
PS Lightwave	PS Lightwave	District Security Plan	Fiber connection from Alvin ISD to reunification site	4,800

PS Lightwave	PS Lightwave	Fiber connection	University of Houston to Alexander	44,956
PS Lightwave	PS Lightwave	Fiber connection	ESC to Alexander	1,338
PS Lightwave	PS Lightwave	Fiber connection	10 GIG Ethernet PISD ESC-Annex	127,951
PS Lightwave	PS Lightwave	Fiber connection	Dark Fiber Lease	600
PS Lightwave	PS Lightwave	Fiber connection	Dark Fiber Maintenance	81,300
PS Lightwave	PS Lightwave	Fiber connection	Right of way endpoint Holcombe	28,269
PS Lightwave	PS Lightwave	Fiber connection	Right of way endpoint 6100 Main	39,949
Region IV	OnDataSuite	OnDataSuite	Annual renewal	11,587
Respondus	Respondus	Lockdown Browser	Browser for testing	5,045
Rice	SETG	Membership	Annual renewal for internet connection	74,900
SeeSaw	SeeSaw	LMS	Annual renewal	31,213
SHI	Hyena	AD Mgmt. tool	Annual renewal	197
SHI	Microsoft	EES Agreement	Office, E-mail, Servers, Azure, Cloud licensing for staff and students	260,000
SHI	Microsoft	Support	5-pack annual support contract	1,999
SHI	SHI	PEN test	Security maintenance	22,956
SHI	Snare	Syslog	Annual renewal	2,071
SHI	SolarWinds	Dameware		975
SHI	Veeam	Backup solution	Annual renewal	40,355
Skyward	Skyward	SIS	Annual renewal	230,780
Skyward	Skyward	Open Edge Management	Annual renewal	2,393
Skyward	Skyward	Crystal Reports	Annual renewal	595
Skyward	Skyward	Open Edge Replication	Annual renewal	2,259
Sunburst	Sunburst	Type to Learn	Annual renewal	11,968
TPX	TPX	Phones	Phone bill	18,000
Troxell	Aura	IDT	Annual help desk support	600
Turnitin	Turnitin	Turnitin	Originality checking and feedback	32,460
Tyler Technologies	Tyler Technologies	Munis	Annual renewal	105,344
Zoom	Zoom	Zoom	Annual subscription	1,800
Total				**2,650,079**

Appendix C-Teacher Skills Rubric

To ensure that all teachers are proficient in technology usage and integration in Pearland ISD, and to meet the state requirement for teacher technology self-assessment, the Teacher Technology Proficiency Rubric is used each school year to determine needs for training and coaching, as well as to determine individual proficiency level of technology skills. The Teacher Technology Proficiency Rubric is aligned to TTESS and the ISTE standards, which are state adopted.

Teacher Technology Proficiencies

Appendix D-Student Technology Assessment

Each school year, all eighth-grade students are required to complete a technology applications assessment to determine which skills are acquired and mastered through their previous school years. Along with the eighth-grade assessment, implementing the district non-negotiables for keyboarding, digital citizenship, and the use of learning management systems and Office 365 apps, students are using technology as a tool to create, collaborate, and connect through their learning experiences.

Pearland ISD Non-negotiables