EDUCATION 2035

Fall 2018 Status Report - As of January 31, 2019

Executive Summary:

Education 2035 is an initiative that has at its foundation a core values statement (below) that guides all activity under its umbrella. It has as its goal in stage one, the imagining and strategic planning for the creation and application of artificial intelligence (AI) in the area of teaching and learning on the MSU campus by the year 2035. It was named such with the clear understanding that AI is already here and being used on campus in a variety of basic forms, yet with a more distant horizon to force participants to look beyond the next 1-3 years. In this way, faculty can practice educated, creative dreaming to identify current and anticipate future pedagogical challenges as well as the learning needs of the students of today and tomorrow in which AI might be helpful. This conversation will allow us to advocate with on and off-campus developers for the articulated faculty-led goals and design informed by student user-input.

Attendees at two workshops (October 31 and December 7) and in three smaller focus lunches (mid to late November) were asked to formulate a core values statement and an initial list of key questions that were voted on as a group and refined and discussed in the latter sessions. These questions include: 1) What are our core values regarding student and faculty success in the intersection of education, artificial intelligence and design? 2) Why would someone come to MSU? What do we give to those students and how does technology help us? 3) How to prepare faculty and students for the challenges of new technology both here and in the workplace? Will using AI lead to better learning? 4) How do we include theories of learning and design into these systems? In addition to the four questions, several MSU specific administrative action items emerged in our conversations. These will be listed together here as well as under the questions from which they emerged so as not to take them from their initiative contexts. Throughout the conversations, we were pleasantly surprised that, regardless of discipline, faculty and academic staff from across campus were able to agree on a number of key strategies with which to address the above questions. The report below outlines the preliminary results of these conversations. The action items appear twice: separately below and in the context of the questions in which they arose. The report is now divided into three sections:

- Section 1: Recommended Administrative Action Items, AI Action Items, and Grant Action Items (the latter in-progress)
- Section 2: Fall 2019 workshop attendance, participant demographics
- Section 3: Preliminary findings from the four questions that guided the workshops and lunches.

Over the course of these activities, faculty and staff from a total of 18 colleges/units attended (40% women/60% men, 12% faculty of color) with representation from IT and student services at the second workshop (See the attached report). In spring 2019, we will continue targeted lunches that will focus on developing grant proposals as well as continuing the conversation from the fall in specific areas. A third workshop will take place in May with 4 invited speakers, several from off-campus. In this way, we will expand to include broader representation of the campus community, including students, as well as select regional and national partners. Fall

2019 will also have an additional workshop. At the writing of this report, partners from this initiative are working on 2-3 new National Science Foundation grant proposals related to digital literacy and data science to be submitted in 2019.

Education 2035 is organized by Andrew Christlieb (CMSE) and Sonja Fritzsche (CAL-German) and the steering committee – Dirk Colbry (CMSE), Bill Hart-Davidson (CAL-WRAC), Brian O'Shea (CMSE-Physics/Lyman Briggs), Bill Punch (Computer Science/Engineering), Scott Schopieray (CAL-Ed Tech), and Devin Silvia (CMSE). The initiative is supported with the generous support of the College of Arts & Letters, the College of Engineering, and College of Natural Sciences, and the MSU Graduate School.

Section I:

Administrative Action Items

- **MSU Educational Technology Policy and Acquisition Steering Committee**: There was also a consensus that the university needs to create a structure to ensure that faculty voices are heard and integrated into educational technology policy and purchases on campus so that the discussions begun at Education 2035 workshops continue in a strategic manner and don't proceed in the ad-hoc manner that has been the case. It was recommended that a university-wide teaching and learning technology steering committee be created made up of faculty and academic staff as well as other voices (e.g., undergraduate, graduate, and international students and student services) be included. Central to such a committee is that it is diverse in gender, race/ethnicity, and academic discipline. Input from this committee would also be considered for campus IT decisions that influence teaching and learning. Innovation would not be done for the sake of progress, but rather have sound pedagogical values, goals, and strategies. Tools should be used creatively to solve real world problems. This is what will motivate and engage faculty. Above all technology use should not distract or impede learning/teaching.

- **MSU Educational Technology Core Values Statement**: See Question 1 below to be facilitated by the above proposed committee.

- **MSU Values-based Purchasing Evaluation Checklist:** There needs to be a set of general questions to help in purchasing decisions used to evaluate the tools we use currently using and potential new tools that reflect a general approach to best practices in theories of teaching and learning with educational technology. This would include recommendations for accessibility, data privacy concerns, guards against implicit bias, etc., and would be based, in part, in an institutional educational technology values statement. Faculty who would use the product need to be involved in decision making so that it addresses their needs, as faculty spend a lot of time getting a system up and working and adapting it to their course structure, only to have the technology switched on them.

- **MSU University Hybrid and Online Student Learning Objectives:** The question of a need for MSU student learning outcomes/objectives (SLOs) with specific reference to SLOs for general education and SLOs for online learning continued to come up in discussions.

- **Educational Technology Training and Support:** There is a need for more educational technologists across campus to help faculty work with technology and IT. Some colleges/units have them and other do not. Without proper support faculty will try something new, not like it, and quit. If proper training doesn't occur then nothing will be accomplished, only frustration will ensue on all sides – students, faculty, and IT. The Lilly program and FOD used to help in this regard, but now opportunities are more dispersed and unclear. There needs to be some type of central location to advocate and support colleges/units in teacher training.

Artificial Intelligence Action Items

- **AI student** – Existing assessment data would be used to create an AI student with which to train faculty/academic staff/teaching assistants, for instance. Special attention would need to be given to assessment data from a diverse group of student so as not to reinforce existing biases.

- **AI grader** – increase value of homework, because all problems get checked and gives instructor and TA time to focus on creative instruction and student interactions. We also found articles from China, where they were already doing this in K-12. This would start as a human assisted AI and could be done in the same way we use AI in assisting doctors in finding parts of images that might be where there is cancer.

- **AI around theories of learning and pedagogy**– We saw that chat bots could be used to pick one piece of the theory of learning, say reinforcement which we all liked, and push that for the students. We all agreed we need to have someone talk with all of us about relevant theories of learning and pedagogy so we can find place to try out AI in a controlled setting to see how we can improve things (needs to be enlightening not frustrating). We need to keep DEI values in mind so as not to create new exclusions/implicit biases, when we should be welcoming/ supporting intersectionalities and accessibilities.

Funding Action Items

- **Grants**: The National Science Foundation (NSF) has recently announced several funding opportunities related to increasing student data awareness, understanding of technology and general digital literacy with due dates starting in January 2019. The initiative is targeting these and promoting opportunities to participants as they come along. We are also continuing to look for additional possibilities. We are also pleased that some participants are collaborating in informal ways across campus as a result of having met each other at Education 2035 lunches or workshops. Grant proposals are currently being submitted for

- Two preliminary proposals for NSF Institutes for Data-Intensive Research in Science and Engineering - Ideas Labs (I-DIRSE-IL) Program Solicitation Number NSF 19-543 submitted

- One MSU Science + Society @ State (S3) grant proposal submitted to fund a pilot digital literacy course that would support plans to expand to a possible dual university collaboration on this topic via a proposal to NSF "Harnessing the Data Revolution (HDR): Data Science Corps (DSC) Building Capacity for HDR" Program Solicitation NSF 19-518. We plan to submit the latter in AY 19-20.

Section II:
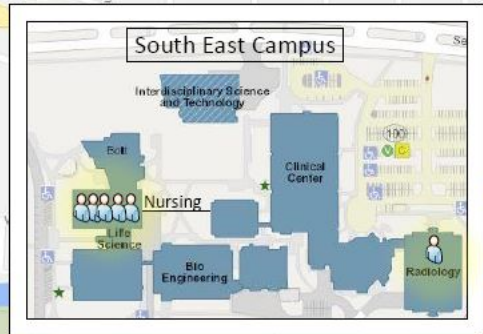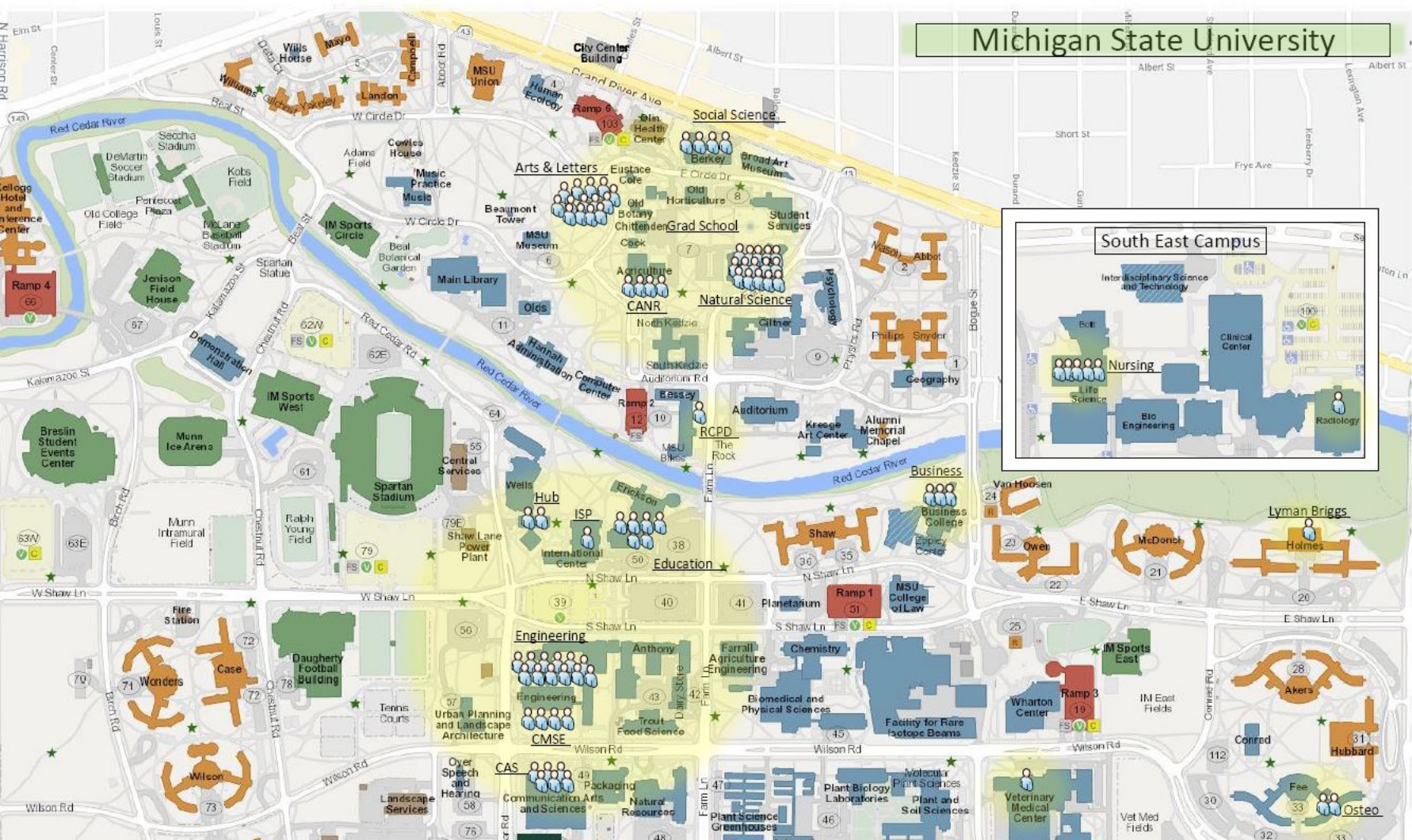**Workshop Participation**

STATS

- 82 attendees between the two workshops
- 33 individuals interested but not present
    - Caucasian: 86.7%   African American: 4.8%   Asian: 7.3%   Latino: 1.2%
- 18 Colleges/Units are represented by the attendees
- Male: 59.8%   Female: 40.2%
- Attendees:

Associate Provost	2
Dean	3
Associate Dean	6
Assistant Dean	4
Chairperson/Associate Chair	7
Coordinator (Academic Programs, Labs, Chief/Officers, Manager)	8
Director (Programs, Units)	5
Professor (Full, Associate, Assistant)	33
Instructor	2
Academic Specialist	7
Graduate Student	4
International Scholar	1

COLLEGE/UNIT BREAKDOWN

College of Agriculture & Natural Resources	4	International Studies & Programs	1
College of Arts & Letters	13	Lyman Briggs College	1
College of Arts & Sciences	6	College of Natural Science	14
Computational Mathematics Science & Engineering	4	College of Nursing	5
College of Education	6	College of Osteopathic Medicine	2
Eli Broad College of Business	3	Radiology	1
College of Engineering	12	Resource Center for Persons with Disabilities	1
Graduate School	1	College of Social Science	4
Hub for Innovation in Learning & Technology	2	College of Veterinary Medicine	1

Michigan State University

South East Campus

Interdisciplinary Science and Technology

Bott

Clinical Center

Nursing

Life Science

Bio Engineering

Radiology

Wills House
Mayo
Campbell
Williams
Butterfield
Yakeley
Landon
Music Practice
Music

City Center Building
MSU Union
Human Ecology
Ramp 6
103
Olin Health Center

Social Science
Berkey
Broad Art Museum

Arts & Letters
Eustace Cole
Old Botany
Chittenden
Cook

Old Horticulture
Student Services

Grad School

Natural Science

Agriculture
CANR

Psychology

Eli and Edythe Broad

Adams Field
Cowles House
Beaumont Tower
MSU Museum
Beal Botanical Garden
Main Library
Olds
North Kedzie
South Kedzie
Computer Center
Hannah Administration

Giltner

Phillips
Snyder
Abbot

Geography

DeMartin Soccer Stadium
Secchia Stadium
Kobs Field
Old College Field
McLane Baseball Stadium
Kellogg Hotel and Conference Center
Perrecott Plaza
Spartan Statue
Jenison Field House
Ramp 4
66

IM Sports Circle

Red Cedar River
Red Cedar Rd
62N
62E

Demonstration Hall

Bessey
Ramp 2
12 10
RCPD
The Rock
MSU Bikes

Auditorium
Kresge Art Center
Alumni Memorial Chapel

Business
Business College
Epley Center

Van Hoosen

Lyman Briggs
Holmes

IM Sports West
Breslin Student Events Center
Munn Ice Arena
Spartan Stadium
Central Services
Ralph Young Field
Munn Intramural Field

Wells
Hub
ISP
Erickson
International Center
Education

Shaw
Owen
McDonel
21

63W 63E

Shaw Lane Power Plant
79E 79

Fire Station
72
Wonders Case
71 78
70

Daugherty Football Building
Tennis Courts
Urban Planning and Landscape Architecture
Oyer Speech and Hearing

Engineering
Anthony
CMSE
Engineering
Trout Food Science

Planetarium
Ramp 1
31
MSU College of Law

Chemistry
Farrall Agriculture Engineering

Ramp 3
19
Wharton Center

IM Sports East
IM East Fields

Akers
28

Wilson
73
Landscape Services

CAS
Packaging
Communication Arts and Sciences
Natural Resources

Biomedical and Physical Sciences
Facility for Rare Isotope Beams

Plant Biology Laboratories
Molecular Plant Sciences
Plant and Soil Sciences

Veterinary Medical Center

Conrad
Hubbard
Fee
Osteo

Vet Med Fields

Plant Science Greenhouses

Wilson Rd

Section III:

Question 1) Education 2035 Core Values Statement (draft)

Action item: The MSU Education 2035 initiative holds that technology and AI-enhanced learning must be adopted primarily for education improvement and not as a dollar-saving opportunity. When done well these are not inexpensive tools. During the fall 2019, we met three times to discuss a core values statement. The various participants found the following four values and subcategories/questions to be the guiding principles for successful technology adoption on campus in the area of teaching and learning. Only in this way will we be able to thinking critically in solving real today and in the future problems, rather than just thinking about streamlining and improving teaching. All activity of the Education 2035 initiative embodies these values.

- **Community** – conversation, collaboration, shared decision making from community teams/brains that include faculty, students, staff, and administrators.
- **Diversity, Equity and Inclusion** –diversity of users reflected in diversity of work groups, open source/open access, algorithmic literary, digital literacy, continual recognition of and measures taken to combat implicit data bias that reinforce existing cultural power structures
- **Transparency** – student and faculty data usage ethics, data privacy rights, culture of data usage consent, data implicit bias, decision making and policies, transparency of data, algorithm, process
    - Data collection (D2L issues?): what gets collected and how long is it stored?
    - Data ownership: who owns it?
    - Data control: who gets control? How can students edit/adjudicate?
    - Data access: who sees what, how is the data displayed, how do I ask for it? What
        happens when the company is sold?
    - Data use (D2L): how does D2L use the data, how does MSU use the data, how to
        instructors use the data, how is any of this communicated to the students?
    - Data communication: how is data shown?
- **Accountability** – equity audit process, development of a university code of ethics for data ownership, data ethics MSU data privacy statement and syllabus information, assessment of compliance with first three values (Community, DEI, and Transparency), tools must solve real pedagogical problems, not just innovate for innovation's sake.

Question 2) Why would someone come to MSU? What do we give to those students and how does technology help us?

In this section, discussants came to some conclusions and also posed questions to be considered in future sessions and in other MSU community discussions. Above all these questions must be approach with humility, taking a hard look at the differences between who we think we are at MSU, how others perceive us, and who we want to be as an institution in 2025 and 2035.

- The size of MSU is a strength and also a weakness. Incoming students look for an identity and communities at MSU, personal connections. Technology could help in suggesting people, events, activities, etc. on campus who could be beneficial to your career and personal interests (along the lines of the College of Arts & Letters Excel Network). If you like this, you might also like that. Challenges would be to ensure that students are still broadly exposed to all that campus has to offer rather than guided along a narrow band of already existing interests that are shaped by implicit biases in the system. Technology also is no substitute for real human communities, but is an aid – definition of effective-use of AI-assisted humans is based in application of the above value statement.
- AI can aid all but particularly first-generation students in career development by identifying multiple resources, pathways, alumni and other networks and integrated opportunities available on-campus, locally, regionally, (inter-) nationally.
- How is technology changing the social contract with students?
- How will technology help us serve the changing demographic of student as the population shifts? There will be more first-generation students, more returning students and potentially students with less preparation in Math and Writing.
- Is there a space for user defined success? Why are students coming to MSU and who are they?
- How will we at MSU do it better than others and why will we do it better? If we do, this can be why they come here. What differentiates MSU over others now and in the future? How can we get to that vision?
- To what extent does the repurposing of higher education drive how we design learning experiences. How will the new co-curricular record influence this outcome? Does a major equal the discipline and if not, do majors matter? Institutionally driven systems (us: faculty, staff, admin) vs user driven systems (students; could also include faculty and staff)
- Does AI play a role in bringing students to MSU and facilitate their access to experts?
- What does it mean to be taking students away from Central, Western, etc. How can we help these and other regional institutions (community colleges, HBCUs, tribal colleges, liberal arts schools, UMichigan) as we help MSU adjust to future challenges?
- Ways to improve advising
  - The value and challenges of student selected pathways
  - What are quick and slow pathways and their advantages and disadvantages?

- o Your learning style indicates you might like an active learning class or you might not – here are the sections that might fit your learning style –
- o Volume divided by the number of connections you have to different pieces – higher level, lower level more automated.
- Ways to improve MSU community and change the nature of instruction
  - o Free up instructor – make up good teams, AI-assisted humans, content of material
  - o Personalize learning – along the model of personalized medicine - how do you use AI to allow people to explore more deeply, machine created body of knowledge - rather than talking to one doctor one patient – many students talking to body of knowledge represented by AI interface
  - o Student user experience – on-line networks– allowing students with questions to ask to be referred to students with answers - I'm stuck on this problem- who can help me? What student is on-line now to help you with that (past MOOC examples) – now we are using active blogs, but they leave early and don't continue conversation.

Question 3) How to prepare faculty and students for the challenges of new technology both here and in the workplace? Will using AI lead to better learning?

The conversations surrounding the use of AI first led to the following more general recommendations concerning educational technology on campus followed by recommendations for AI use:

- Throughout the conversations, there was strong conviction that educational technology adoption on campus needed to have as its goal the empowering of students and instructors to learn and teach in new ways. This statement is grounded in the initiative values, particularly that of making education more accessible with diversity, equity, and inclusion as well as digital literacy as central goals.
- **AI student** – Existing assessment data would be used to create an AI student with which to train faculty/academic staff/teaching assistants, for instance. Special attention would need to be given to assessment data from a diverse group of student so as not to reinforce existing biases.
- **AI grader** – increase value of homework, because all problems get checked and gives instructor and TA time to focus on creative instruction and student interactions. We also found articles from China, where they were already doing this in K-12. This would start as a human assisted AI and could be done in the same way we use AI in assisting doctors in finding parts of images that might be where there is cancer.
- **AI around theories of learning and pedagogy**– We saw that chat bots could be used to pick one piece of the theory of learning, say reinforcement which we all liked, and push that for the students. We all agreed we need to have someone talk with all of us about relevant theories of learning and pedagogy so we can find place to try out AI in a controlled setting to see how we can improve things (needs to be enlightening not frustrating). We need to keep DEI values in mind so as not to create new

exclusions/implicit biases, when we should be welcoming/ supporting intersectionalities and accessibilities.

- **<u>Administrative Action item</u>:** There was also a consensus that the university needs to create a structure to ensure that faculty voices are heard and integrated into educational technology policy and purchases on campus so that the discussions begun at Education 2035 workshops continue in a strategic manner and don't proceed in the ad-hoc manner that has been the case. It was recommended that a university-wide teaching and learning technology steering committee be created made up of faculty and academic staff as well as other voices (e.g., undergraduate, graduate, and international students and student services) be included. Central to such a committee is that it is diverse in gender, race/ethnicity, and academic discipline. Input from this committee would also be considered for campus IT decisions that influence teaching and learning. Innovation would not be done for the sake of progress, but rather have sound pedagogical values, goals, and strategies. Tools should be used creatively to solve real world problems. This is what will motivate and engage faculty. Above all technology use should not distract or impede learning/teaching.

- Concerns included the need to maintain ownership when using corporate solutions and the desire for open source solutions. Not only does this involve questions of data ethics and constraints, privacy, and security, but also the need for transparency and accountability in these areas and in decision making. An additional concern is the need for the preservation of academic freedom, including teaching excellence where the teaching needs must drive the technology. Related to the last point, there is a great concern among faculty participants that consultants hired by the university or units in the university used proprietary algorithms to define student success goals. Since these are not open source, it is not possible to ascertain any implicit bias in the material presented or other data ethics issue due to a lack of transparency. Important decisions are based on this proprietary data.

- There was a general sense that user-experience is of utmost importance on the part of faculty and students in design and implementation. Users need to be motivated to use technology in the first place, so user-assessment is an important first step in any development and acquisition questions. The initial questions that go into the design of any software whether developed or purchased from a vendor need to take into consideration the varied levels of expertise and interest in the use of educational technology. What is the problem to be solved and does it need solving? Create a diverse committee or focus groups of target users for feedback. What is intuitive for one person is not for another.

- Training in the use of education technology is at this point ad-hoc across campus and varies in quality and investment, yet is absolutely central to the success to the implementation of any new educational technology. Broadly, there exist two types of users among faculty (and students), those who are interested in creating the educational technology and those who are interested in using it, the latter group including a variety of levels of technological preparation and interest. Training needs to take into consideration these different types of users with a variety of expertise and interest in using technology and the need for transparency. The goal is to move beyond a customer/consumer mentality to create "superusers" – informed users with an awareness of or ability to

teach the debates in data ethics/privacy/implicit bias/digital literacy as well as the ability to self-teach after the initial launch training followed by supplemental support as needed.

- At the moment, it is not clear where this training should best come from or is available – department, college, university – and this leads to a sense of frustration on the part of the user as well. An inventory of where this training currently takes place on campus would be important accompanied by the question – what training do we need? For instance, understanding terminology, jargon. What workshops could be done for general use and what ones would need to be specific? Some disciplines have well developed support (MSU Library, Create for STEM, Center for Language Teaching Advancement [CeLTA], Inside Teaching MSU for graduate students/post-docs, etc.) whose expertise is applicable to other situations and can be shared for the benefit of others. Other resources are being developed Academic Advancement Network [AAN] and the Hub for Innovation in Learning and Technology. Some feedback included that workshops can be too broad in scope when trying to cover too many disciplines or that there aren't enough general teaching and learning resources available during the academic year for new faculty, just at the beginning and at the end of the year. More partnering might be done with colleges. Should there be an educational technology makerspace lab/center for teaching and learning on campus? Mike Ristich in WRAC conducted a learning community survey as part of Adams Academy 2.0 that should be helpful in answering the question: Where do you go for professional development?

- There was general consensus that more needs to be done to teach digital literacy on campus both in specifically identified courses as well as in smaller modules that are digitally-informed within existing course offerings. Open data/knowledge transparency is an important value, so that students can see and learn from this in their own motivated ways.

- There was much interest in how AI might create greater accessibility and effectiveness in teaching a wider variety of students more effectively in large classes. AI could assess gaps in student preparation and provide this supplemental training. AI could increase the access to knowledge and learning communities for students with disabilities. More work needs to be done here in identifying appropriate directions for research and development in this area.

- One consensus that emerged was the need for artificial intelligence to support an AI-assisted instructor or grader so that they may do their job in a more efficient manner. A primary interest was to have AI perform assessment to free up faculty to devote the time normally spent grading to teaching students. It is necessary that faculty/students need to continue to be involved in assessment, so that they learn from their mistakes. Recognizing that assessment best practices often require human decision-making, AI can help to screen student projects/tests to identify those portions that need human grading. Also, what type of feedback should the AI provide to be the most effective for the widest variety of students? Assessment feedback is the key to learning through failure. How can different groups be included for the first time (students with various disabilities, etc.)? How can students be engaged in new ways with emergent technologies/AI to help them connect classroom material with their real-world interests/concerns?

- Select campuses are experimenting with chatbots. Is this something that MSU might pursue?

- What type of data corpus already exists on campus in our teaching to help us think about ways that we could develop AI to address specific teaching and learning needs?
- AI can be programmed to help with training and coaching in educational technology use, so that some teachers and some students might teach themselves. Additional human support would always need to be available for when this is insufficient.
- AI could be used to create various test students with which to practice instruction. A challenge would be to avoid implicit bias in the design and data input. An additional variation would be an AI test instructor with which students could try out a variety of teaching methods.
- AI can help to assess the classroom response or even mood in a room. (Again, watch for implicit bias).
- The groups discussed various next steps, including grant proposals, pilot projects/classes, future workshops and lunches.

Question 4) How do we include theories of learning and design into these systems?

The conversations surrounding this question led to the following recommendations:

- The folks who are driving this process need to be faculty, who are informed by their teaching and research, and students who are informed by their learning, as opposed to just going to the best vendor.
- **Action item**: What are our peers doing in the area of teaching and learning support and policy in the area of educational technology? Before we move forward with our recommendations, we need to conduct best practices research into these issues.
- **Funding Action items**: The National Science Foundation (NSF) has recently announced several funding opportunities related to increasing student data awareness, understanding of technology and general digital literacy with due dates starting in January 2019. The initiative is targeting these and promoting opportunities to participants as they come along.
Grant proposals are currently being submitted for the NSF Institutes for Data-Intensive Research in Science and Engineering - Ideas Labs (I-DIRSE-IL) Program Solicitation Number NSF 19-543 with plans for an additional submission in the AY 19-20 round that would supporting teaching and learning initiatives in digital literacies. We will be piloting 1-2 courses through the Integrative Studies program in AY 19-20 before applying. We are also continuing to look for additional possibilities.
- **Administrative Action item:** There needs to be a set of general questions to help in purchasing decisions used to evaluate the tools we use currently using and potential new tools that reflect a general approach to best practices in theories of teaching and learning with educational technology. This would include recommendations for accessibility, data privacy concerns, guards against implicit bias, etc., and would be based, in part, in an institutional educational technology values statement. Faculty who would use the product need to be involved in decision making so that it addresses their needs, as faculty spend a lot of time getting a system up and working and adapting it to their course structure, only to have the technology switched on them.
- There are two categories of learning goals:

- o Student-oriented goals (more research needs to be done here)
  - Does the new thing inspire curiosity and persistence to try again and to probe more deeply
  - Does it inspire more than one way to address a problem, improve routine, more integrated vs more fragments – spinning off into a million, cost sensitive pieces?
- o Teacher oriented goals –
  - Do they help teachers to see at a high level where most good can be done?
  - Does it allow me to evaluate what I am currently attempting to do?
  - Does it maintain the teacher-infrastructure feedback loop or disrupt it to make it harder
  - Does it involve learning theory in a deep way and not just an instrumental approach. Encouraging an approach to learning.
  - Is a learning community valued? A connection with other people?
  - There are common needs, but also diverse ones, so that a diversity of offerings rather than a one-size fits all approach.
  - Ideally there needs to be a common API (Automatic Programming Interface) in the background that is a central; Universal Design – to enhance transparency.

- **Administrative Action item:** The question of a need for MSU student learning outcomes/objectives (SLOs) with specific reference to SLOs for general education and SLOs for online learning continued to come up in discussions.
- **Administrative Action item:** There is a need for more educational technologists across campus to help faculty work with technology and IT. Some colleges/units have them and other do not. Without proper support faculty will try something new, not like it, and quit. If proper training doesn't occur then nothing will be accomplished, only frustration will ensue on all sides – students, faculty, and IT. The Lilly program and FOD used to help in this regard, but now opportunities are more dispersed and unclear. There needs to be some type of central location to advocate and support colleges/units in teacher training.
- One educational technology development strategy would be to engage the Big Ten and other partners in higher education to approach vendors and negotiate as a development team, rather than having them come to us with a pre-determined package. We need to lead the technology not have the technology lead us in how we teach. Pearson and Ed Tech, Cengage often push one theory that doesn't apply to everyone.

5) Some additional questions that emerged from the above topics:

Here are a number of points made in discussions regarding theories of teaching/ methodologies/pedagogy and technology across disciplines. Rather than reduce to a grand narrative, we are letting the voices speak for themselves in this section:

- What is the interaction of humans and computers as we move forward?
- How can we use AI to train our educators?
- Do faculty know enough about teaching and learning?
- Is there a better question?
- Are there moves in learning that translate across theories –
- Reflection, Elaboration, Personal, Interpersonal, Presentational
- Take something smaller more bite size –
- Don't go to the deductive - here's this thing how do you use it, rather here is what this does and this can contribute to your practice
- Community brains/teams – Need programmers, need ed tech people, need normal faculty
- Transparency – teaching them to learn how to learn
- How far along the competencies are my students to create a dashboard summary
- Faculty are not encouraged to be good teachers
- Current practices don't encourage experimentation, and lead to calcification - need professional development expectations
- What training do we need, for example – understanding bias and accessibility
- How do we use AI to chase down missed opportunities? (i.e., identify social determents of misc. practice)
- How do we engage, early and often, a diverse set of voices so we don't continue biases?
- How to prepare faculty and students for the challenges of new technology both here and in the workplace. Role of non-traditional job, for example – YouTube
- A multi-class integration may be required
- Using AI to motivate students?
- How to address gaming the technology
- How and when do we educate students in how to engage efficiently/successfully with this technology? How do we train people in algorithmic literacy to create informed consumers of AI tools? Auto programming for general purpose
- What type of assessment could help shape student behavior and help them reach learning goals?
- How do we develop best practices for a "fearless student" that uses AI to help explore?
- How do we build systems that promote student interaction but avoid plagiarism? (Formative vs. summative assessment?)
- What topics/skills can or can't be taught with AI? Will using AI lead to better learning? (vs. just saving money?)
- What are the mindsets and competencies students will need to succeed in an AI enhanced workplace?