



Designing and Doing TPACK-Based Professional Development

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Have you seen this commercial?



Have you seen this commercial?



“Design a house around this.”



“Design a lesson around this?”





“The tail wagging the dog”

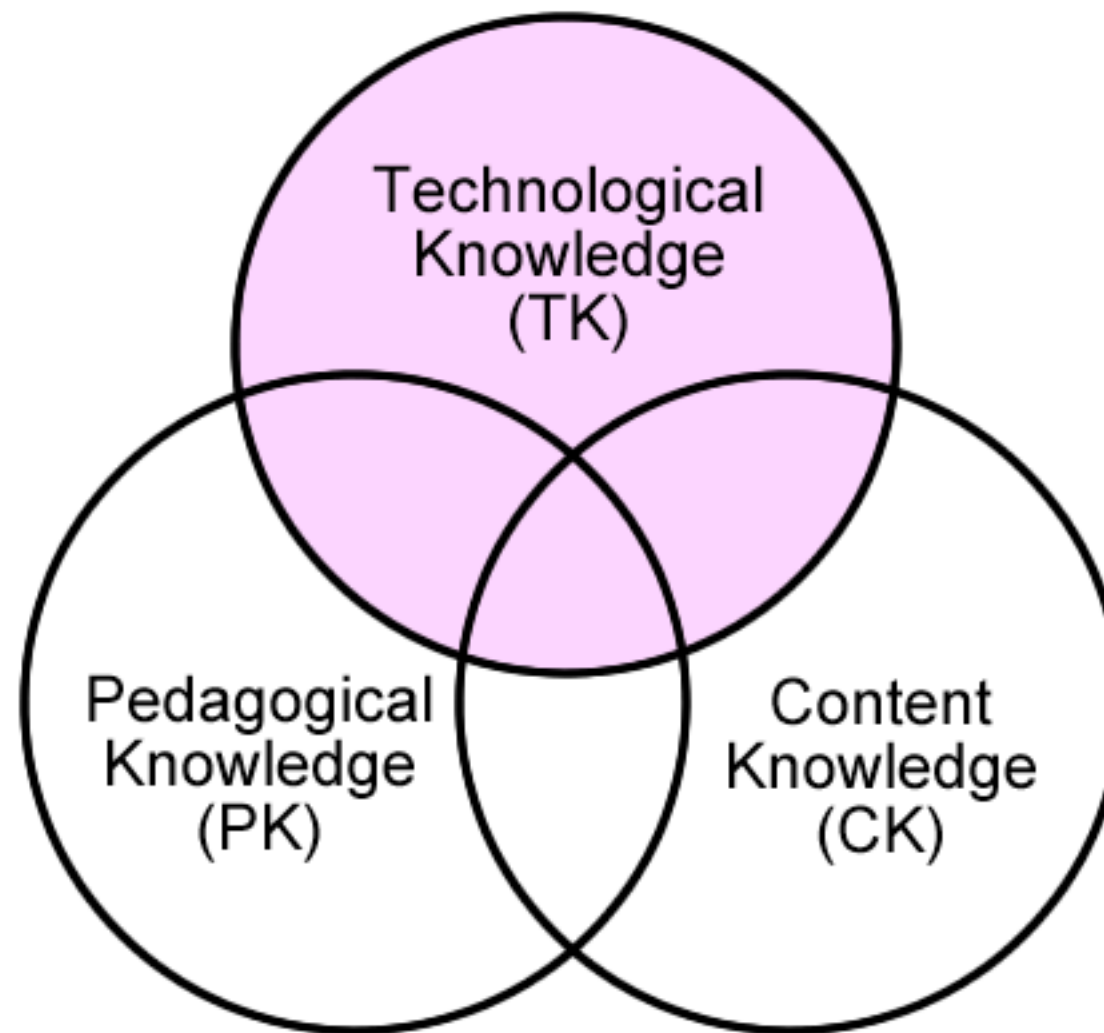
Technology Integration PD Needs:



(a brief exercise)

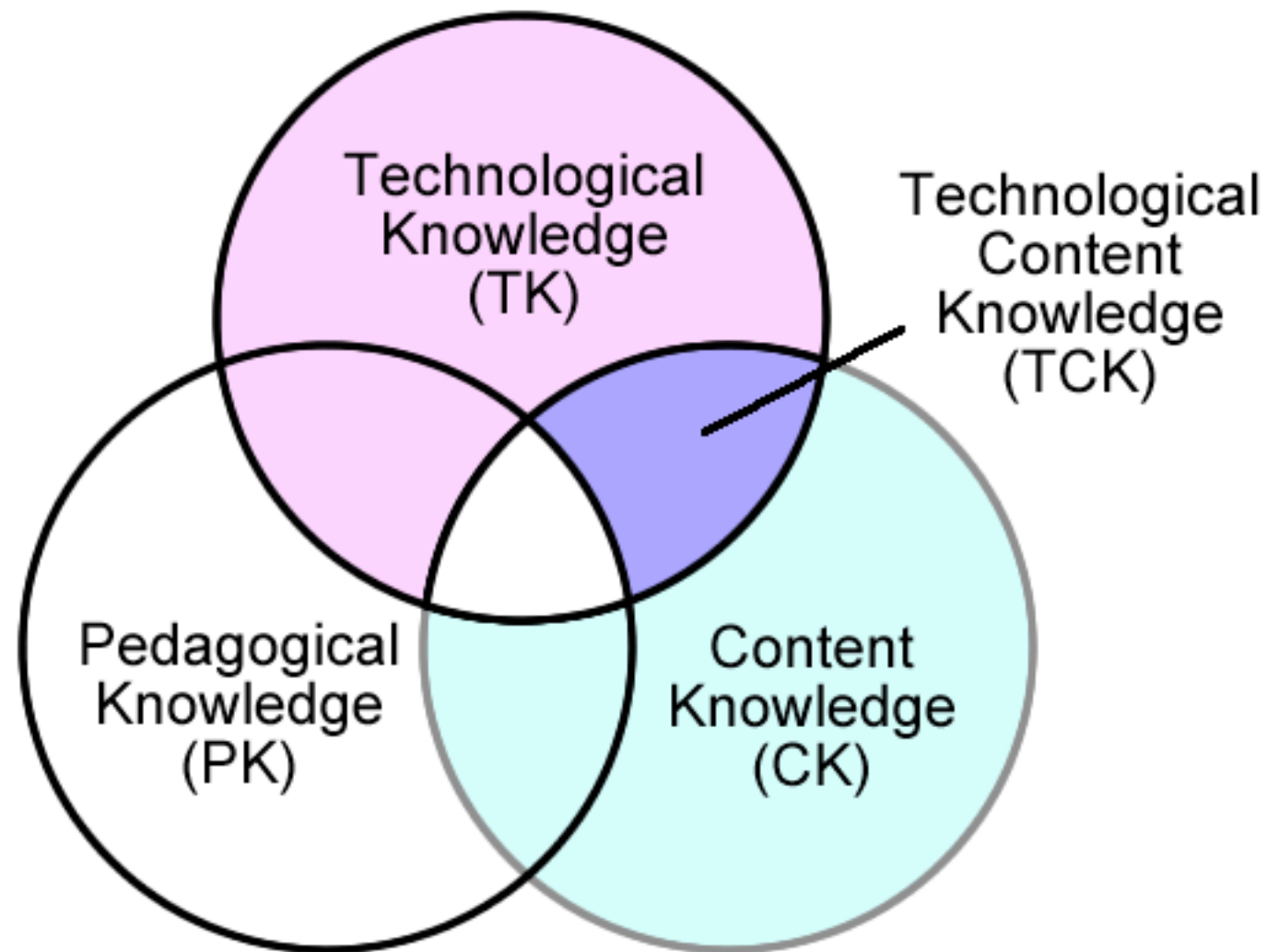
Knowledge needed?

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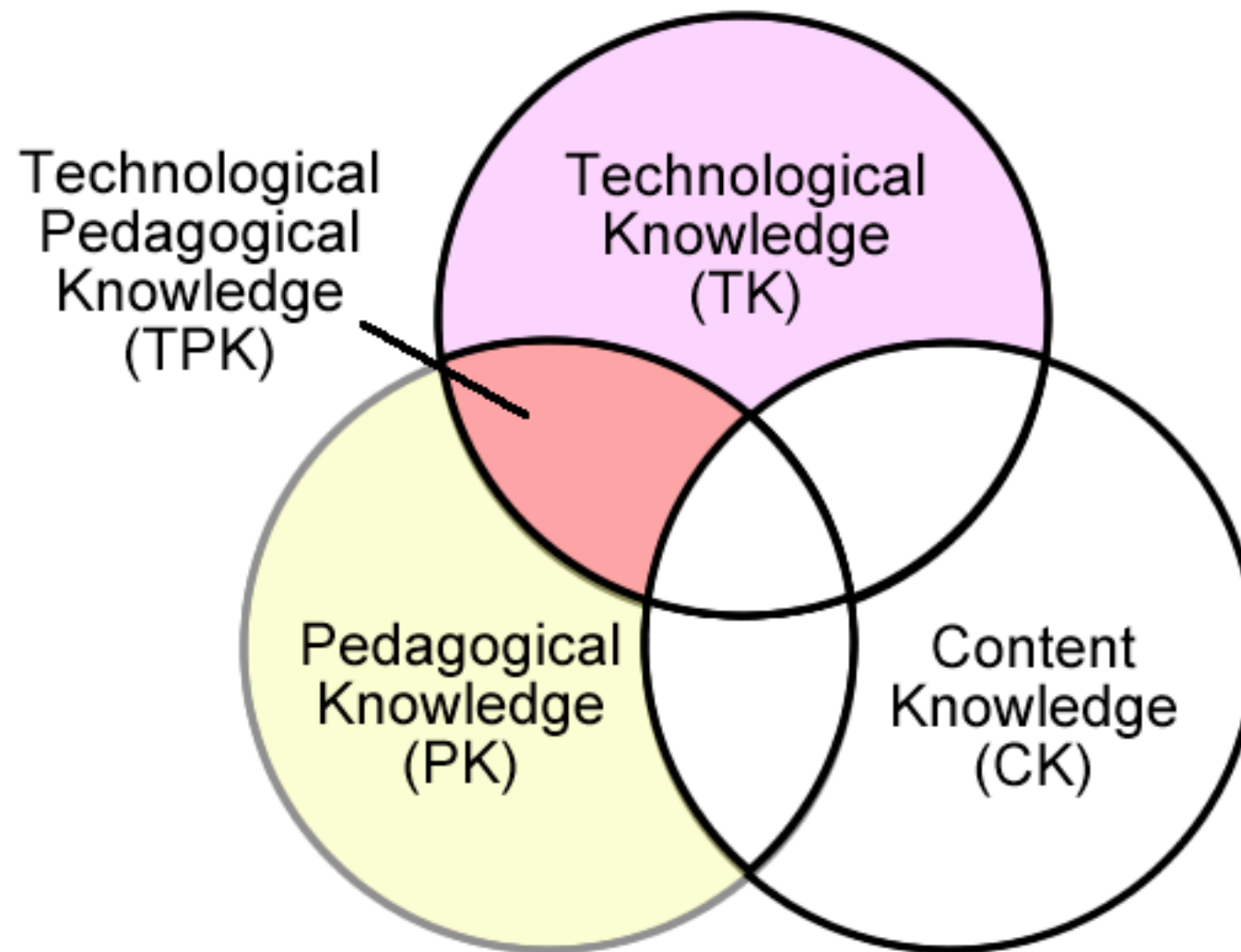
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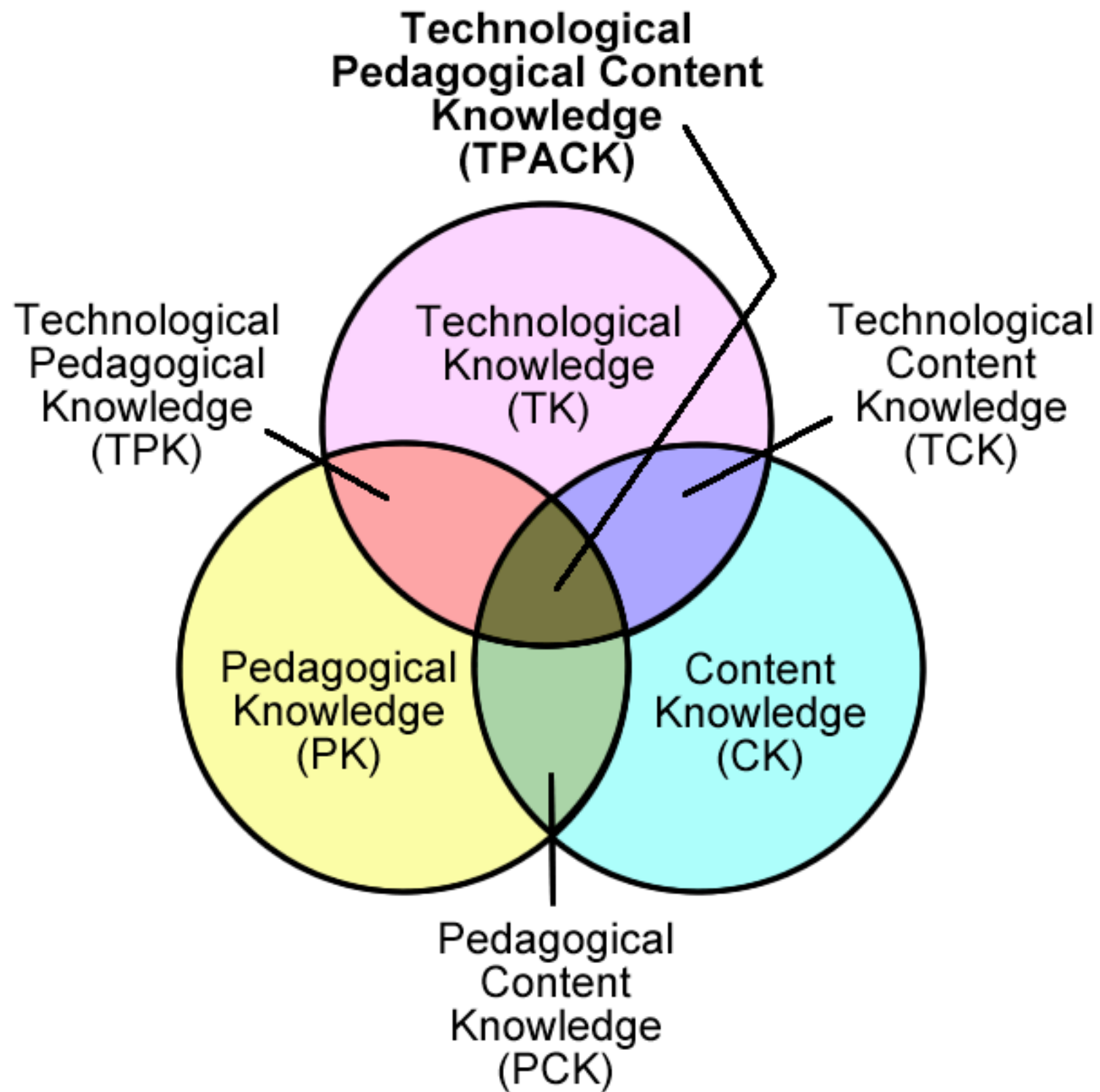
Knowledge needed?



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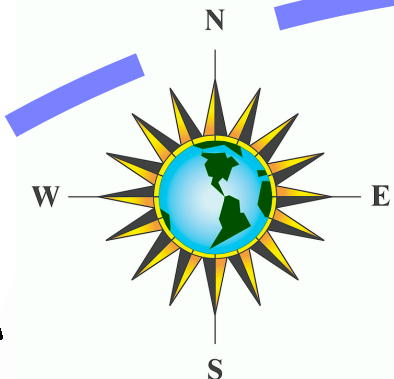
Knowledge needed?







Neighborhoods



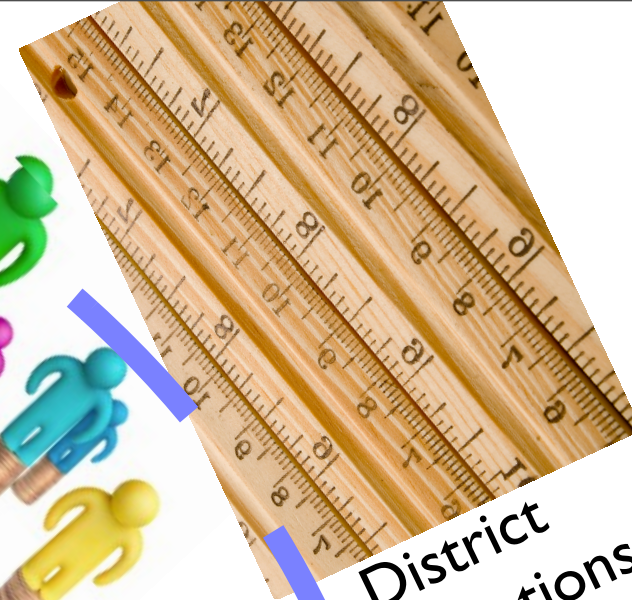
Geography



Families



Socioeconomics



District Expectations



Student knowledge



Time



Access



Languages



Available technologies



Physical space



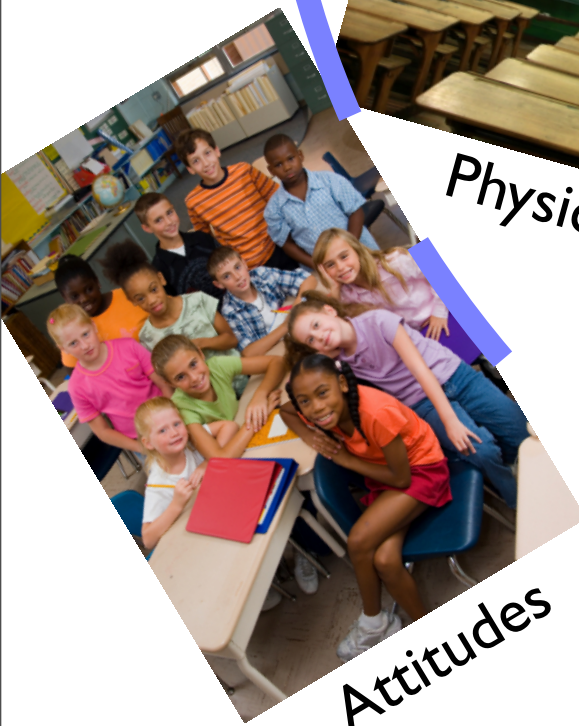
Interpersonal dynamics



Cultural diversity



Teacher knowledge

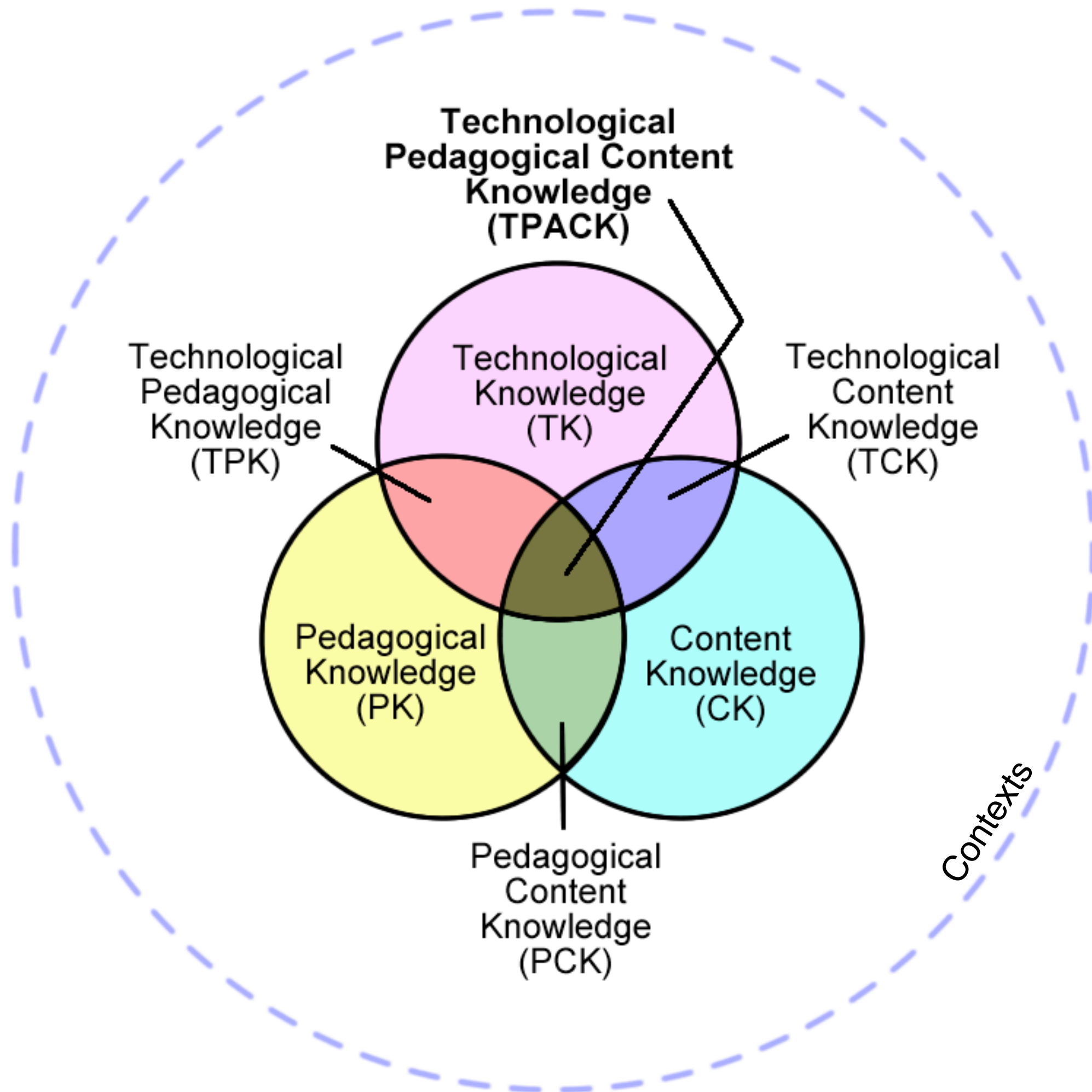


Attitudes



Basic needs

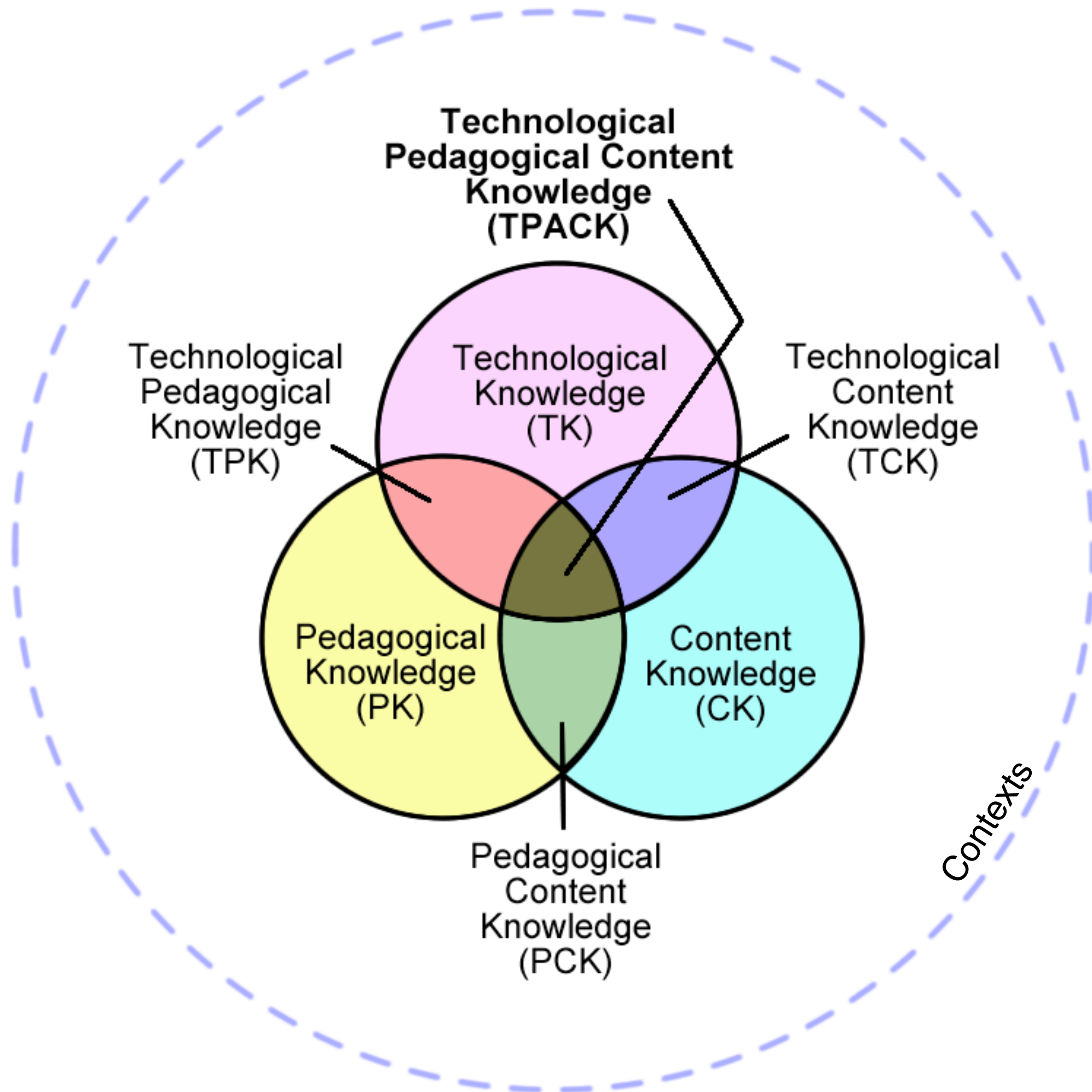
Contexts



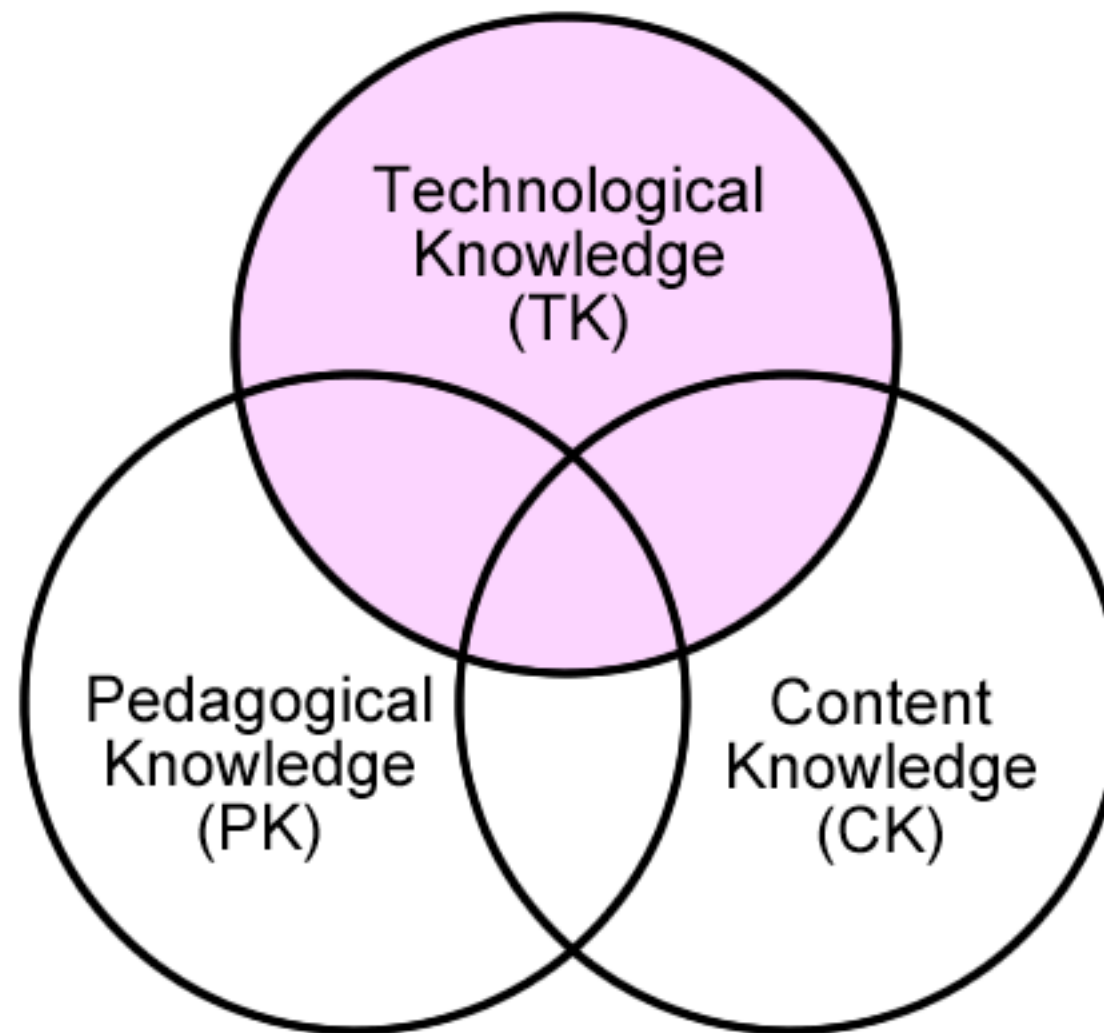
Knowledge Needed?



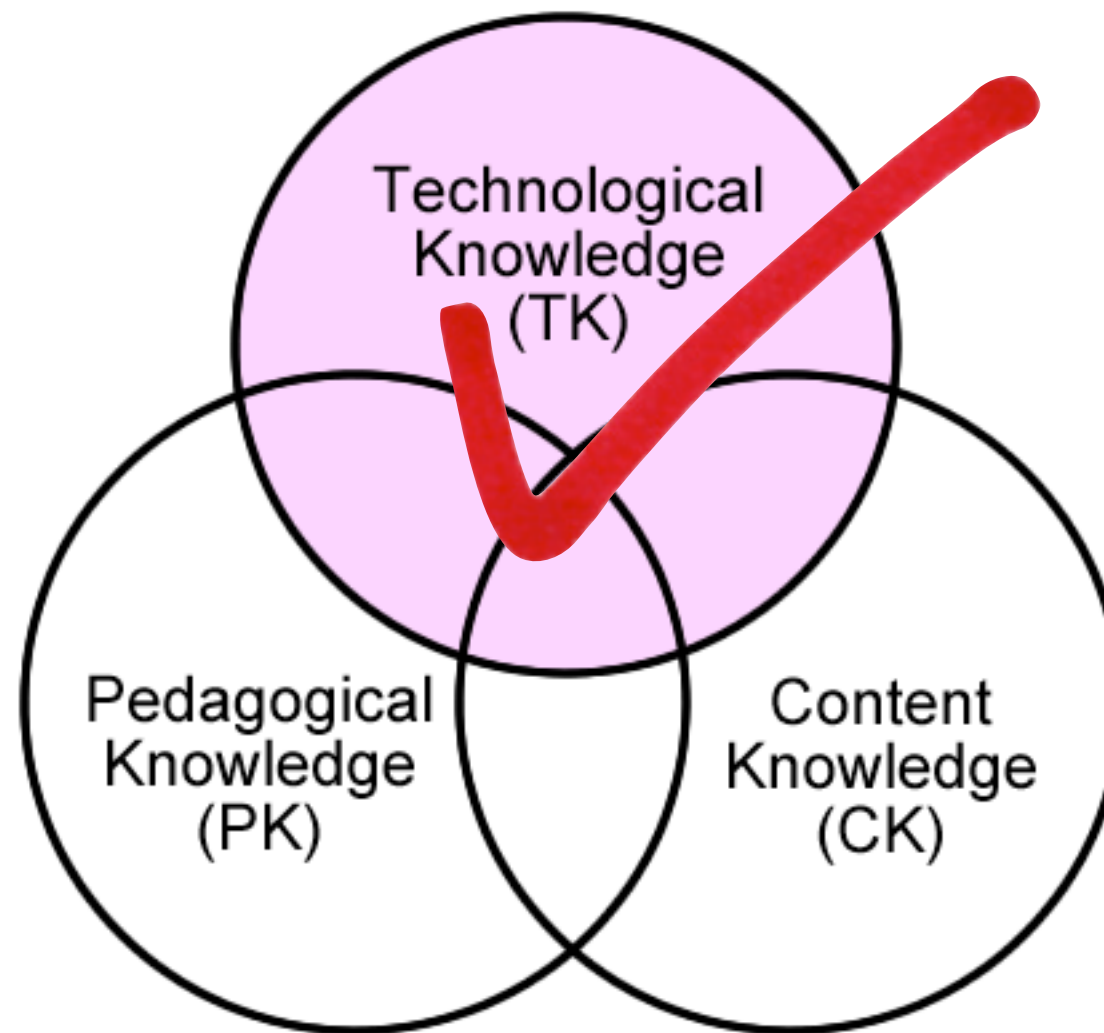
(Your teachers?)



Types of PD?



Types of PD?



- Instructor-led sessions (6 types)
- Individualized learning (4 types)
- Collaborative learning (5 types)
- Data-based inquiry (3 types)
- Materials & approaches development (2 types)

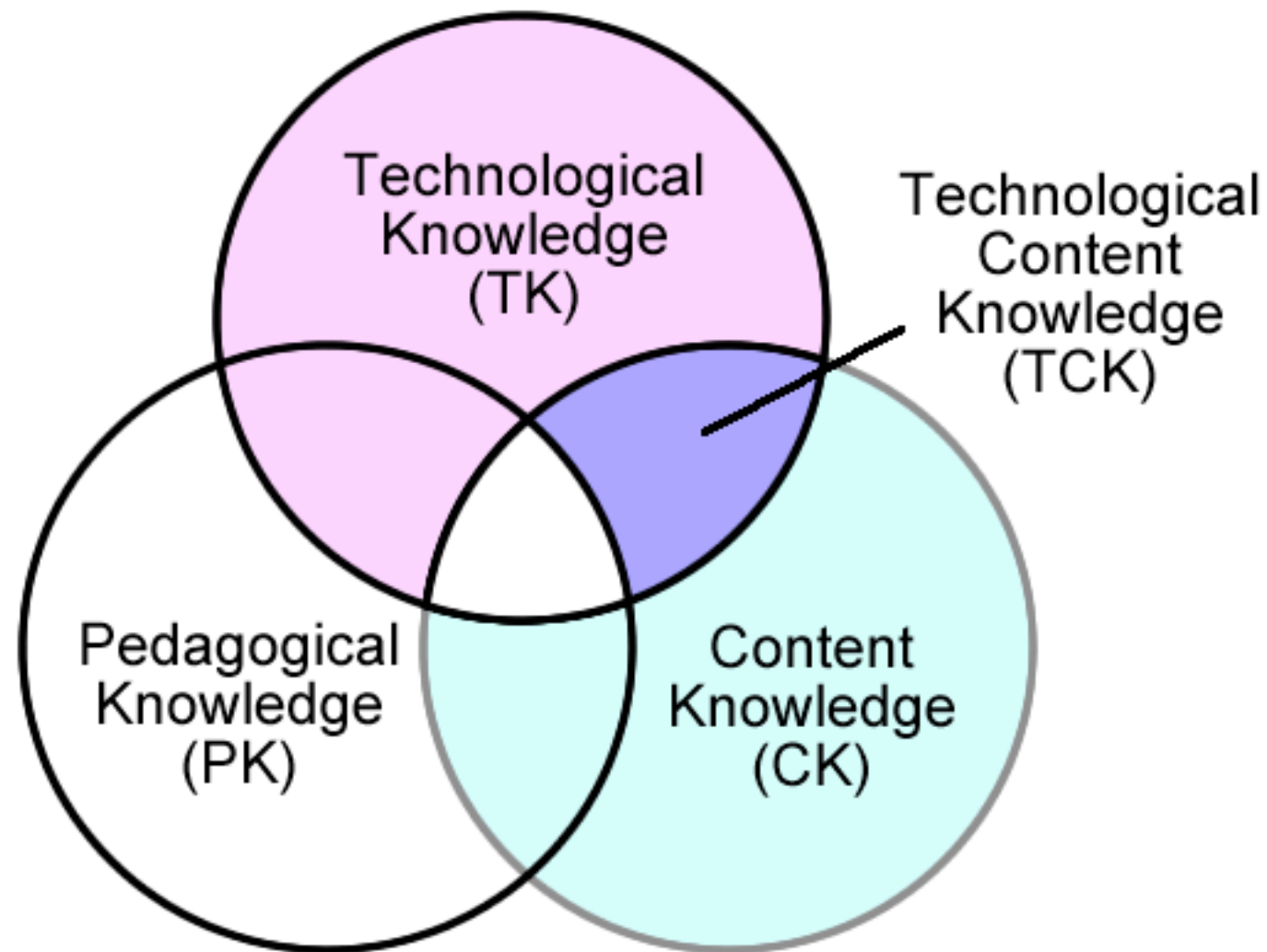
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See: <http://etpd.wm.edu/>

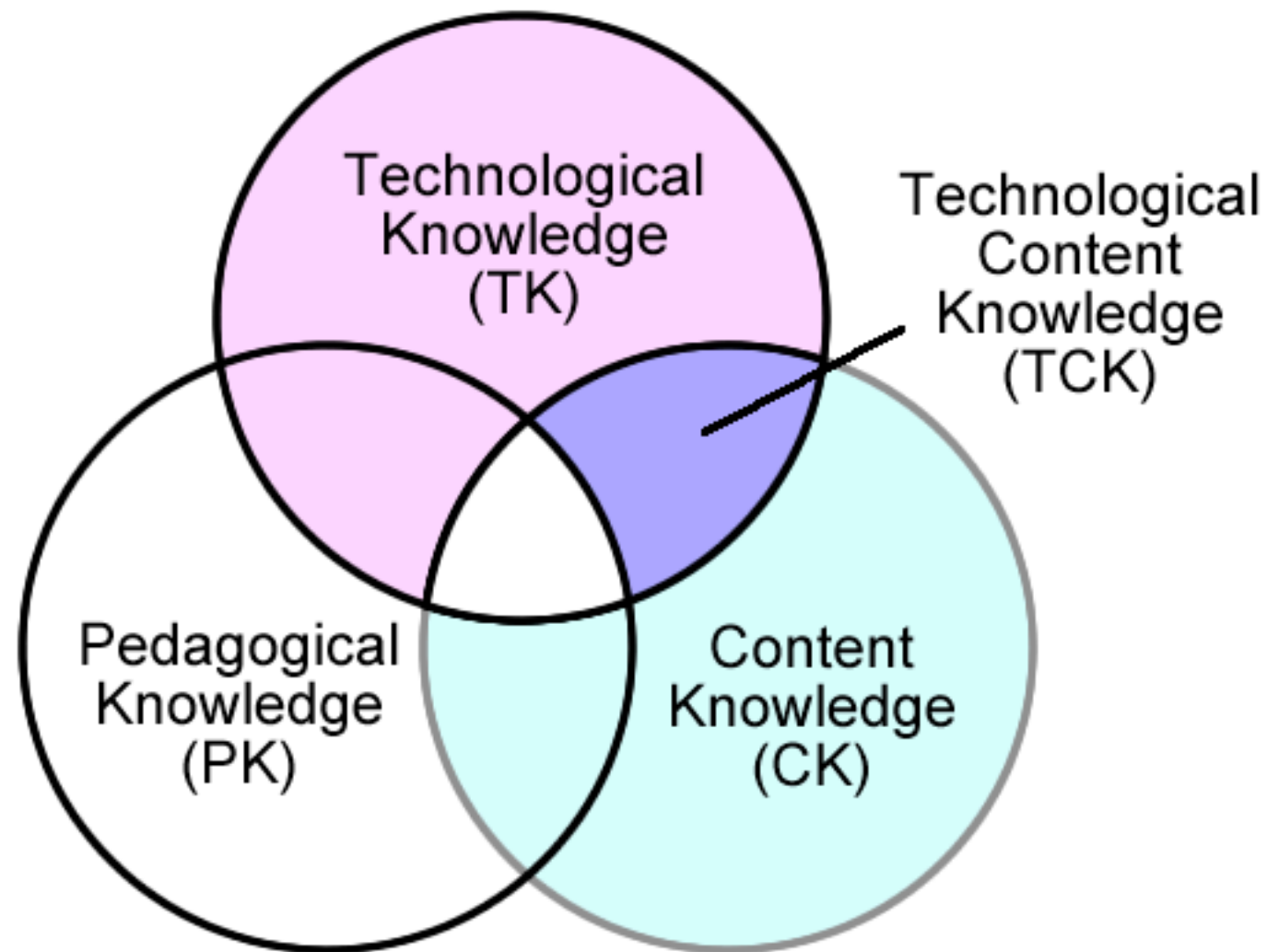
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See: <http://etpd.wm.edu/>

Types of PD?



Types of PD?



Focus: Matching technologies' affordances to instructional goals

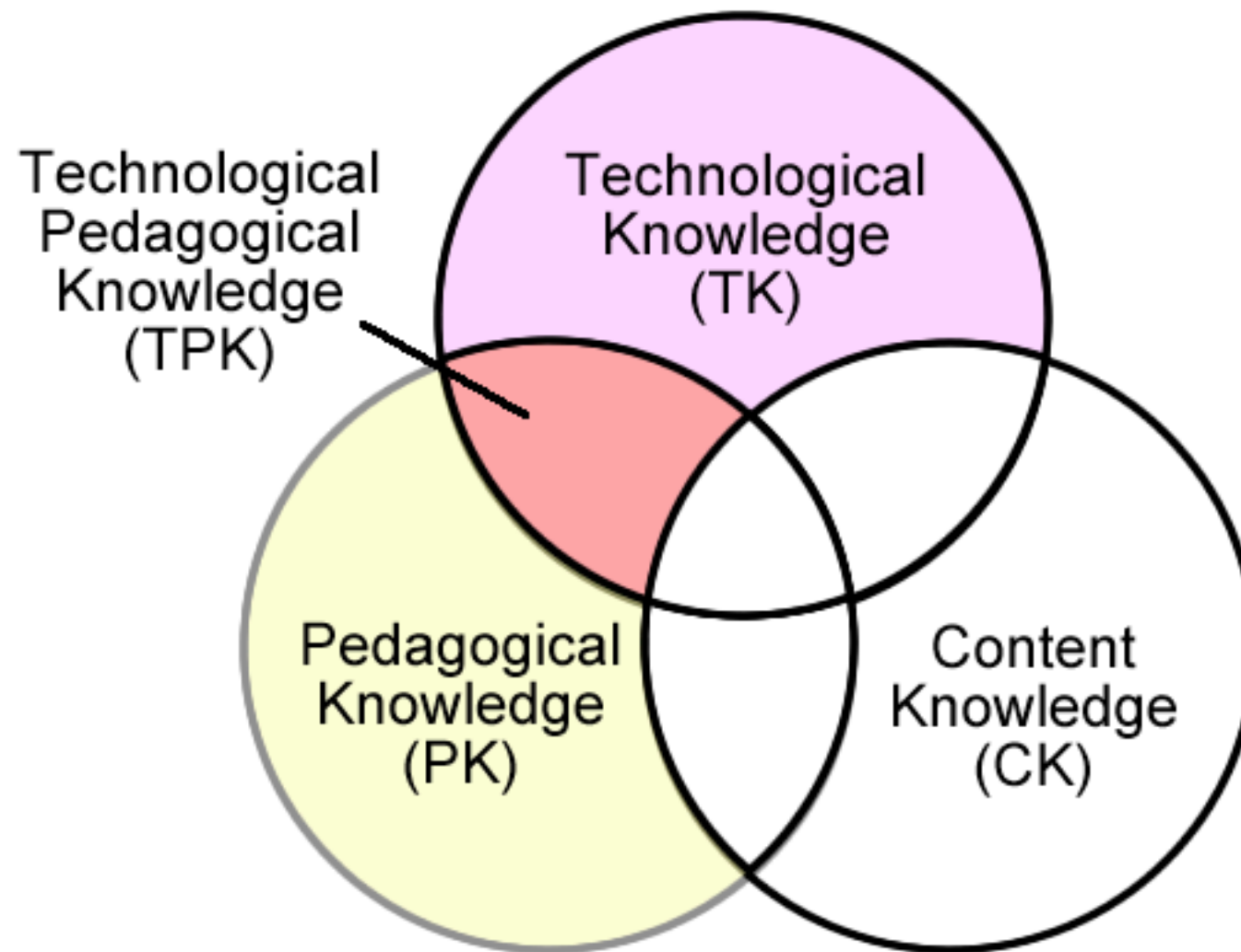
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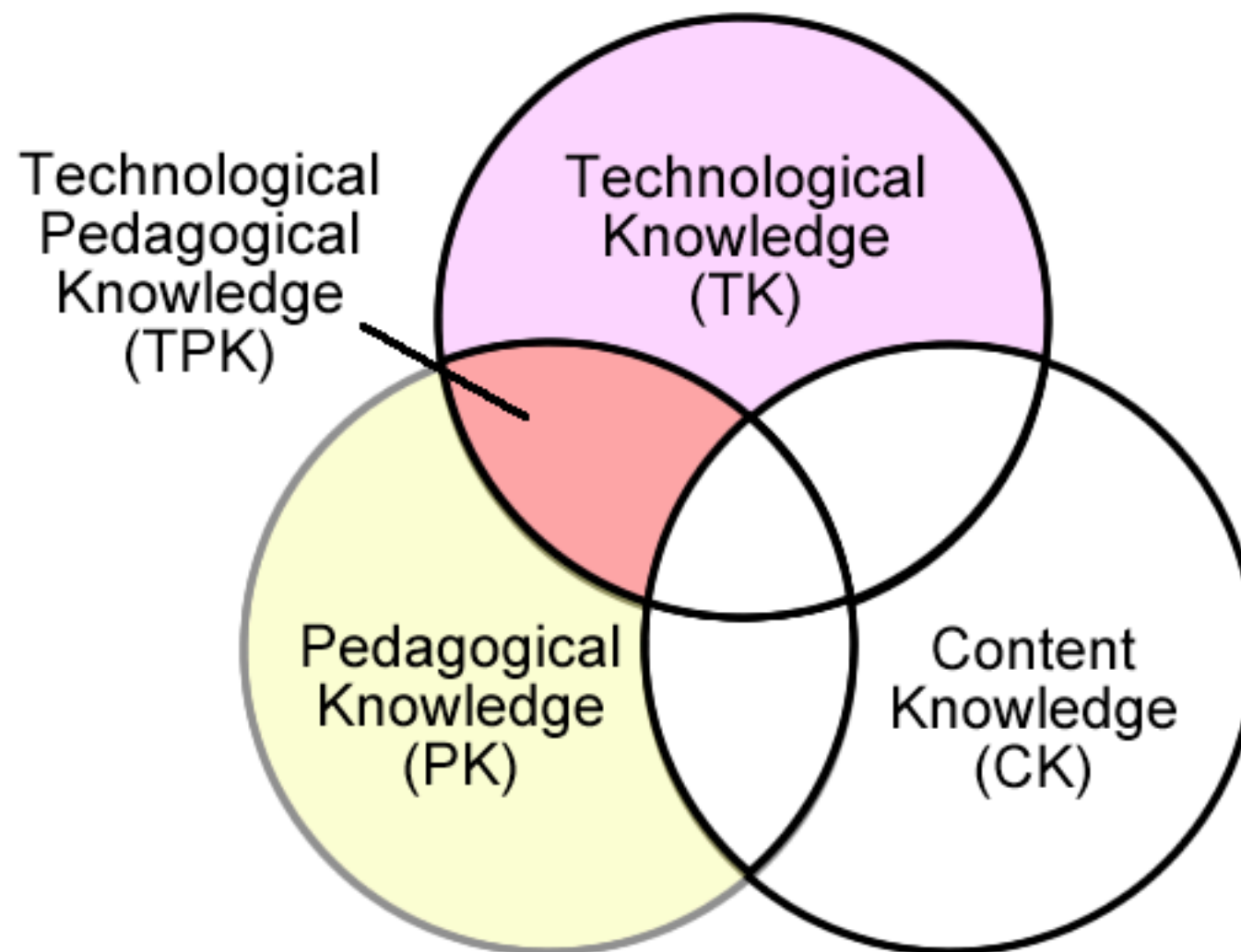
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- Materials & approaches development (2 types)

See: <http://etpd.wm.edu/>

Types of PD?



Types of PD?



Focus: Sharing & testing general management strategies

- Instructor-led sessions (6 types)
- Individualized learning (4 types)
- Collaborative learning (5 types)
- Data-based inquiry (3 types)
- Materials & approaches development (2 types)

See: <http://etpd.wm.edu/>

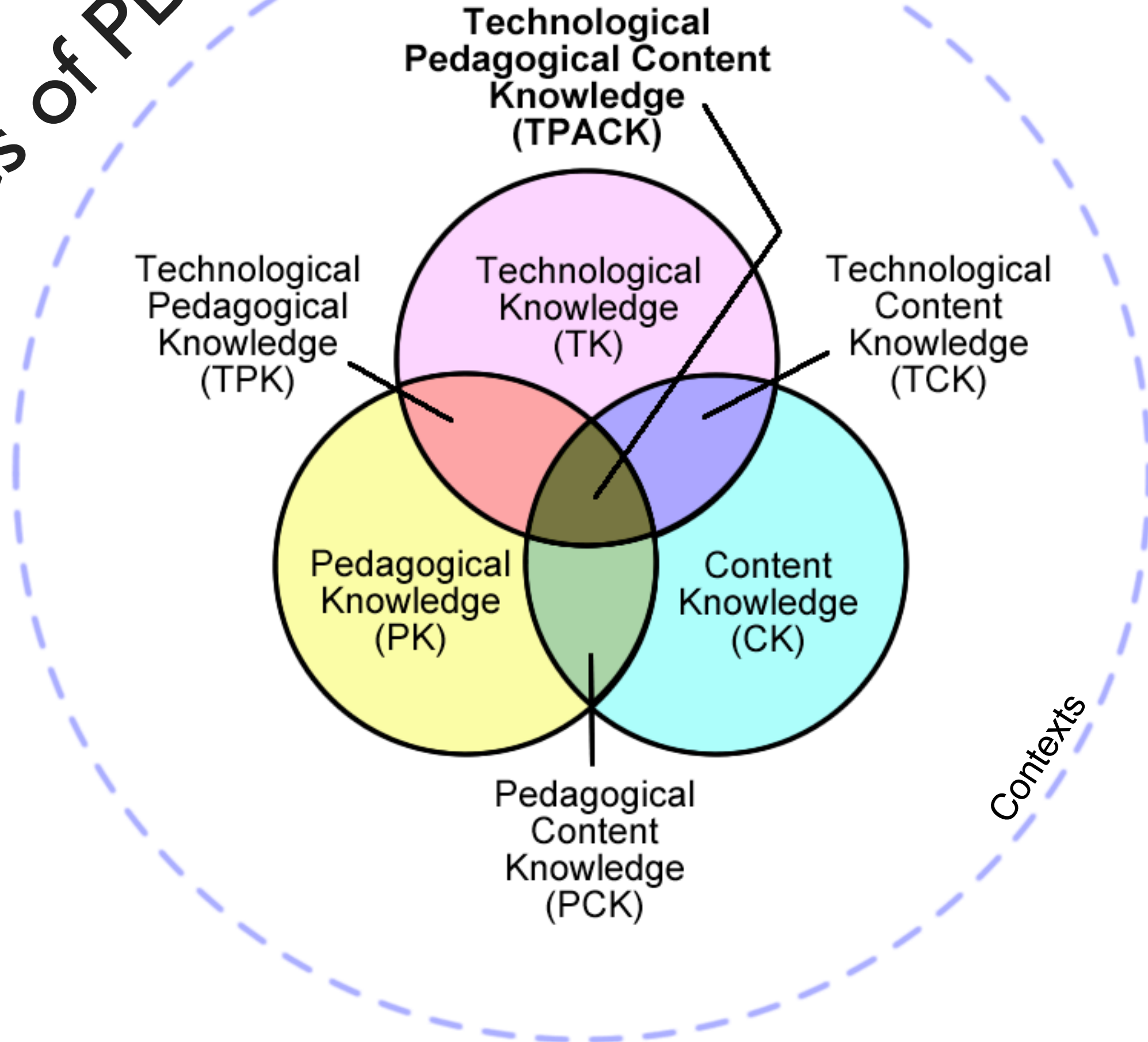
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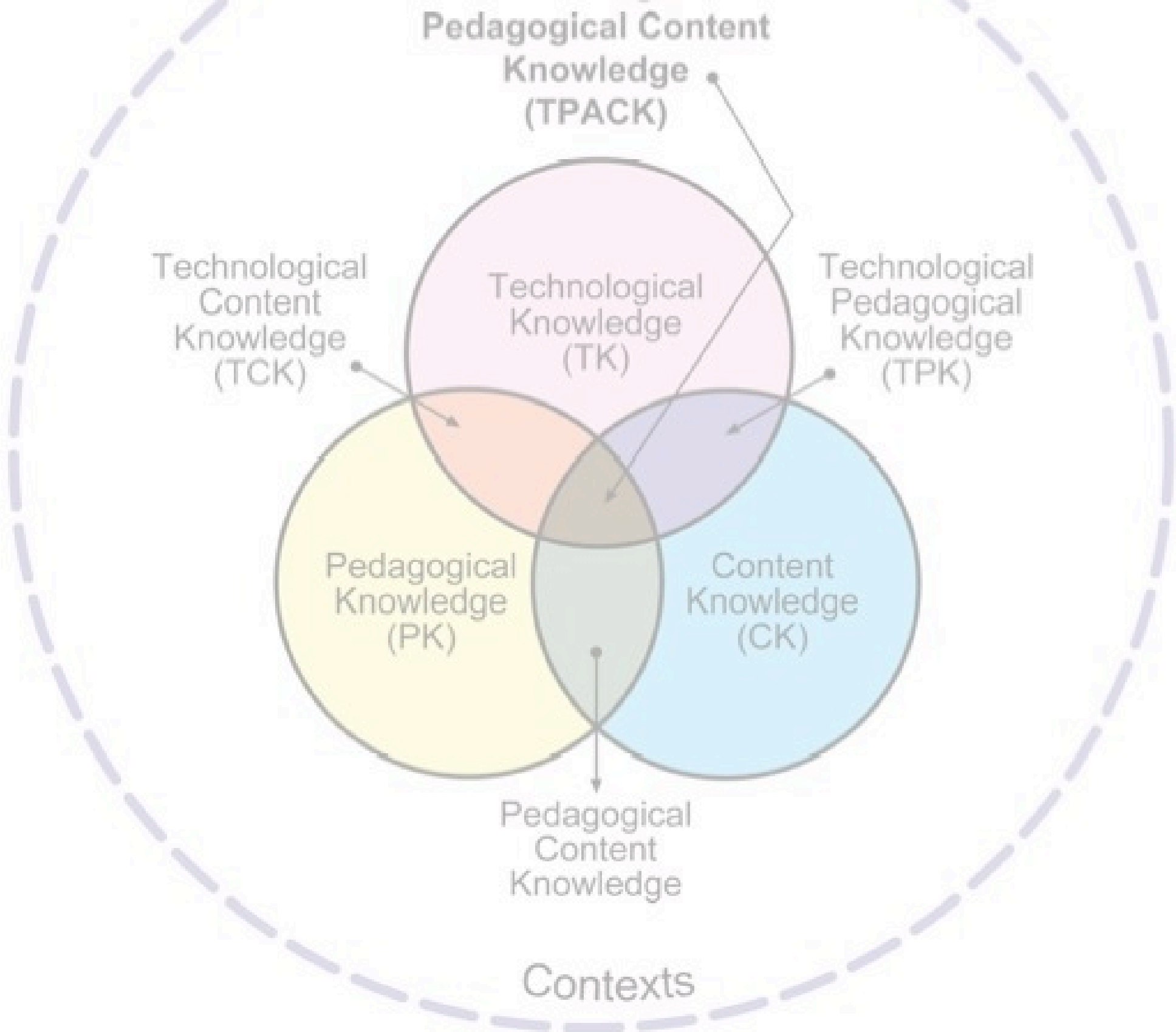
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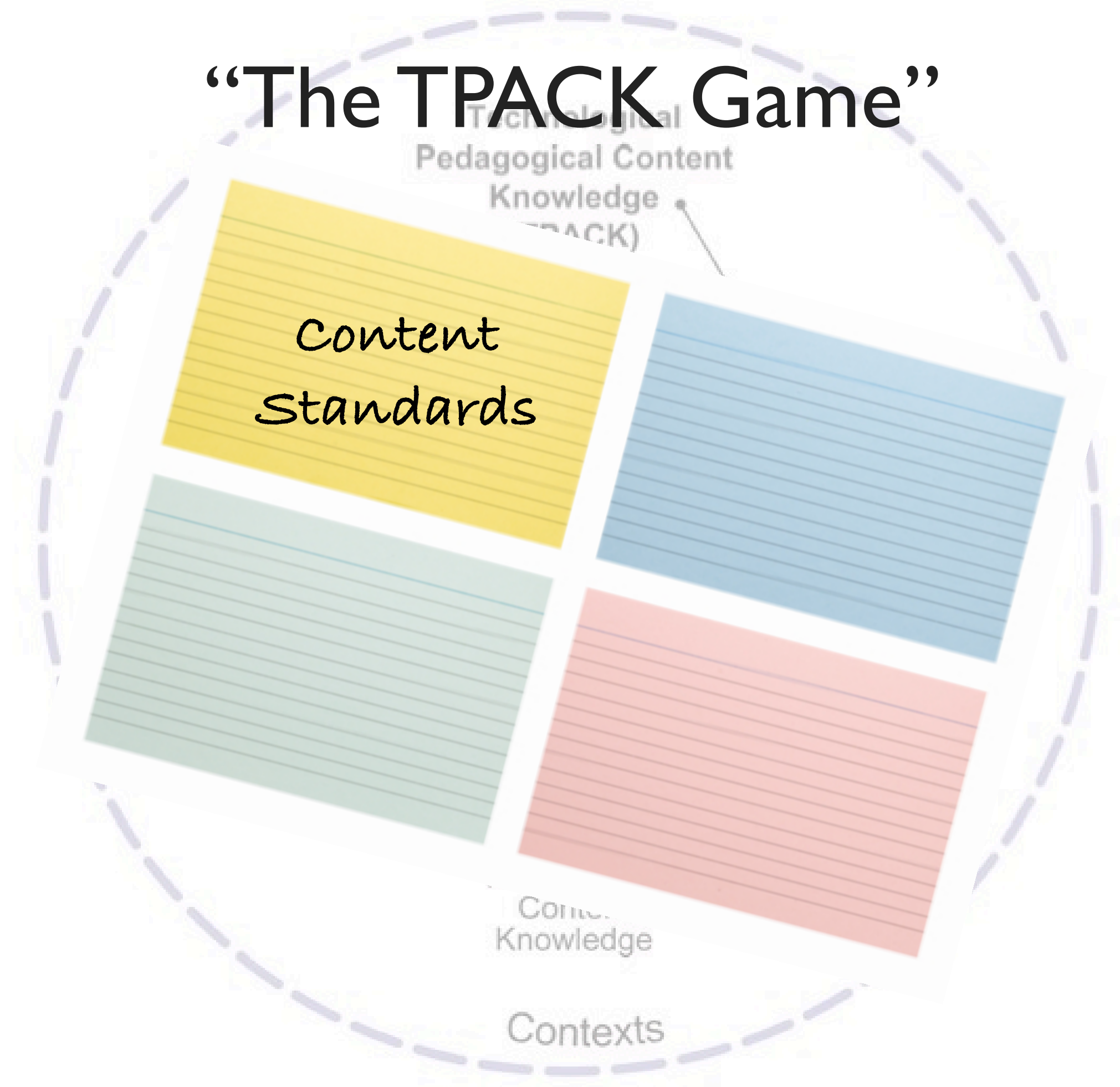
“The TPACK Game”



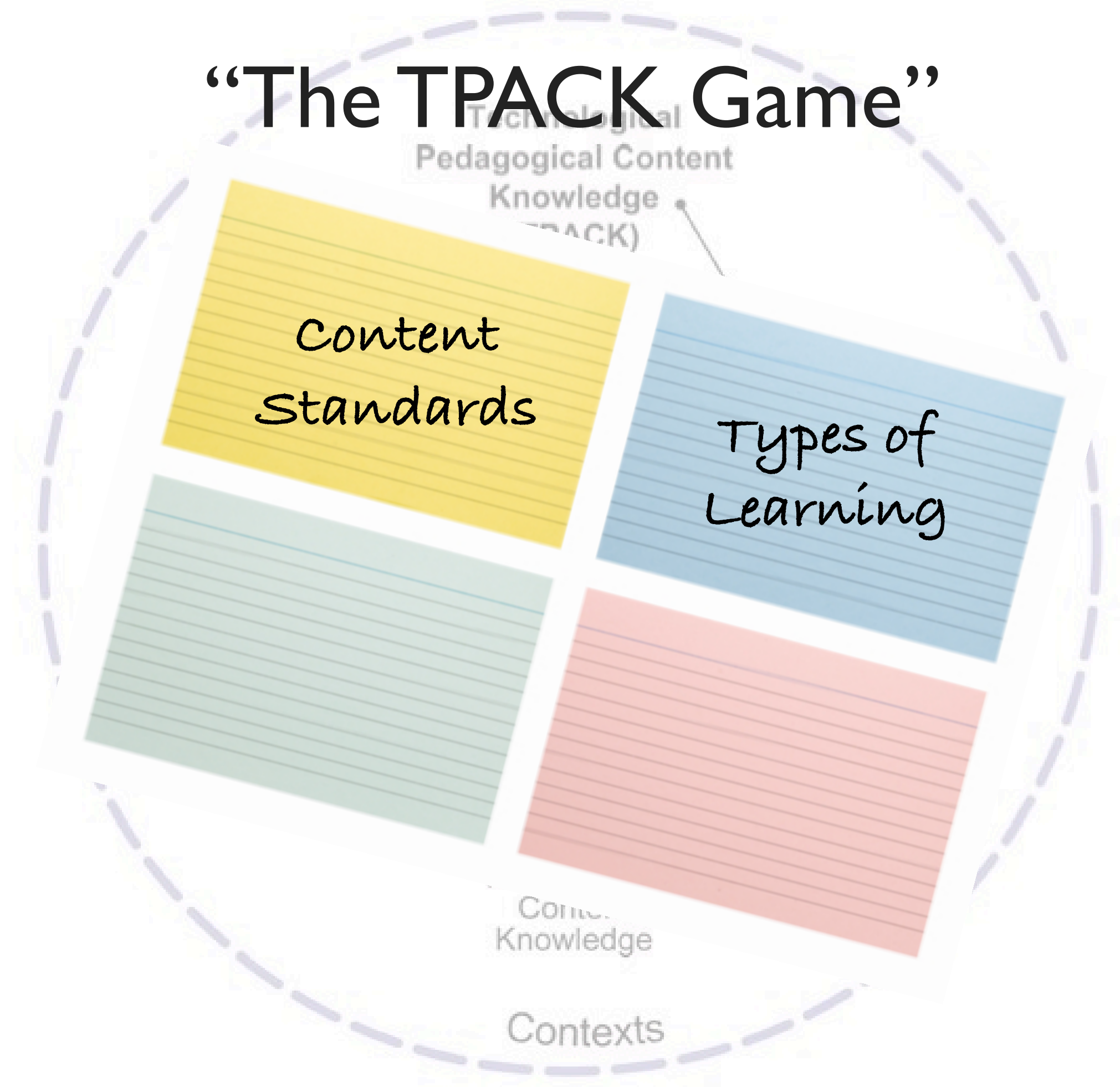
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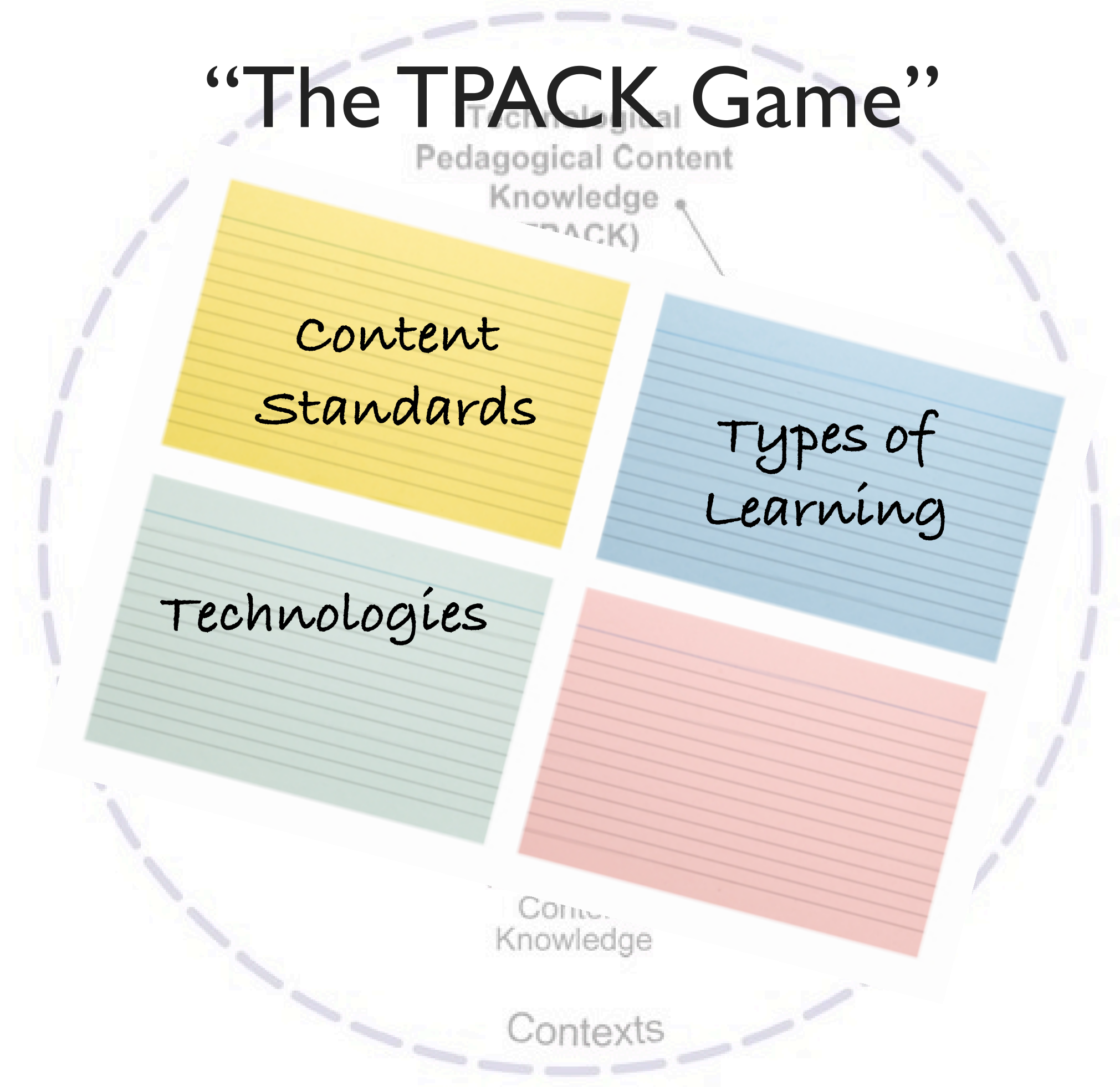
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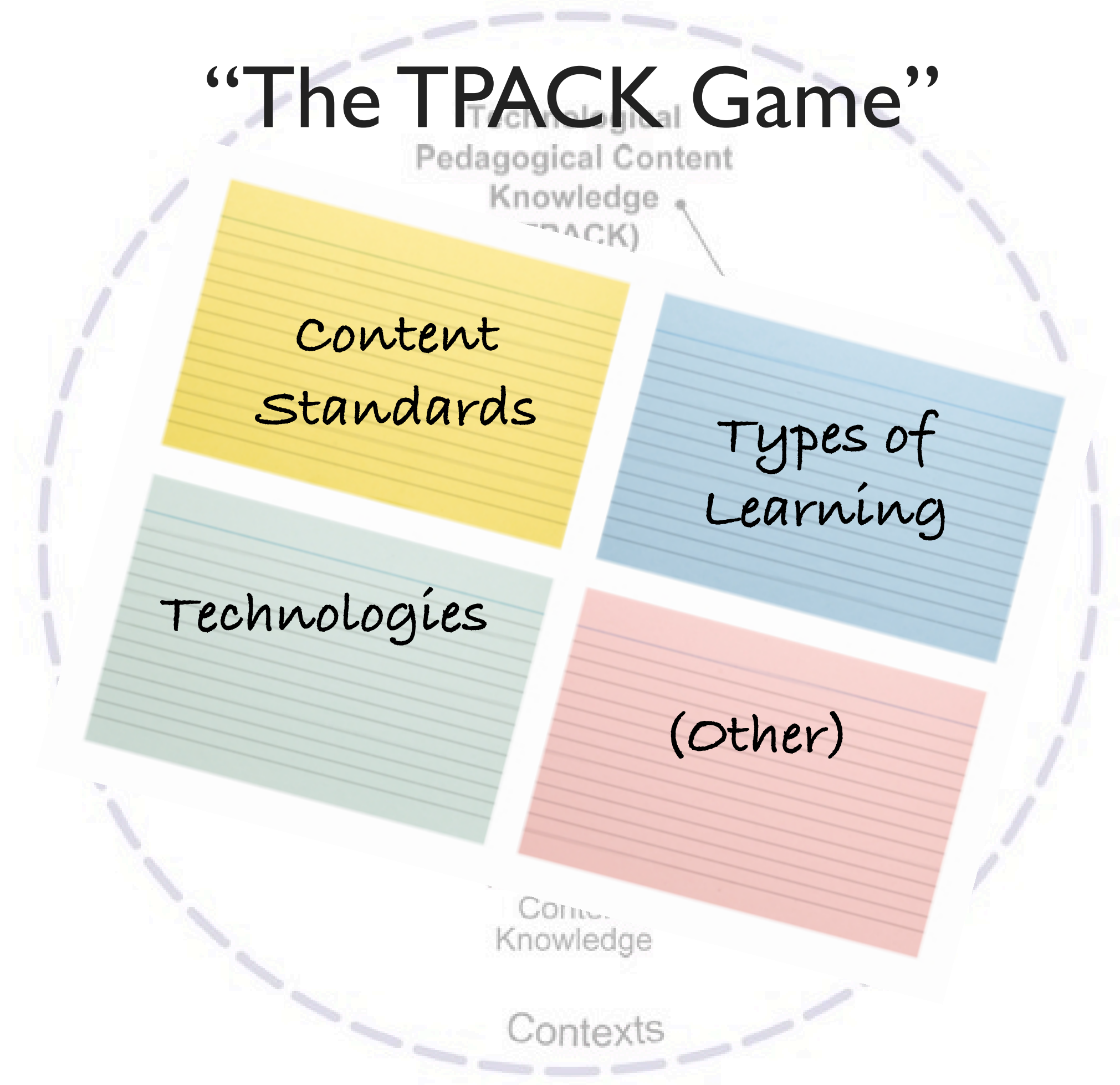
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Learning by Design



Inquiry & Reflection



Modeling

Developing TPACK



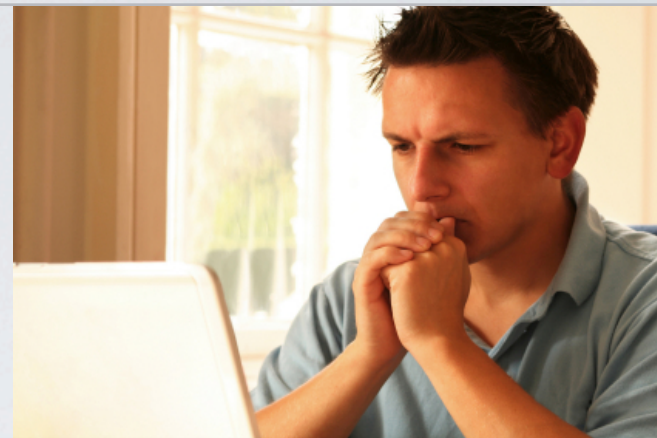
Self-Assessment



Microteaching



Learning by Design



Inquiry & Reflection



Modeling



Self-Assessment



Microteaching



Learning by Design



Inquiry & Reflection



Modeling



Instructional Planning



Self-Assessment



Microteaching

Teachers' planning:

Pages 1 - 8
Historical context
of Pilgrim literature
What worldview did
the Pilgrims have?

of not, choose a
poem + discuss
Assign 1st two
Chapters of Odyssey

how
off.

Pages 9 - 20
Complete historical
background -
Begin John
Smith. Why
was he not a reliable
source? What were
his main goals?

Odyssey
Cont.
Discuss chapter
1 + 2 - Review Iliad background
What is happening.
How do the Greeks
see the gods?

Text pg 20-21
Jump to Bradford
28 - 35
Discussion
Compare Smith
+ Bradford. How
did they differ in
Style + philosophy?

How does this
affect their
decision making
process?
Assign chapter
3 - 4
Discuss as
far as possible.

Who are
Menelaus + Helen
Who are Penelope
and Odysseus

Teachers' planning:

☒ Situated

☒ Contextual

☒ Activity-based

☒ Routinized

Since:

Since:

Educational
technologies

Since:

Educational
technologies

not well integrated
(yet).

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Teachers' planning

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Teachers' planning

content-focused,
activity-based.

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Learning activities

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technologies

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Teachers' planning

content-focused,
activity-based.

Learning activities

differ by discipline.

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differ by discipline.

Technology
integration

interdependent
T, P, C(nt), C(xt).

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Teachers' planning

content-focused,
activity-based.

Learning activities

differ by discipline.

Technology
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interdependent
T, P, C(nt), C(xt).



Learning activity types.



Curriculum-based Learning Activity Types

Activity Type	Brief Description	Possible Technologies
Read Text	Students extract information from textbooks, historical documents, census data, etc.; both print-based and digital formats	Web sites, electronic books
View Presentation	Students gain information from teachers, guest speakers, and peers; synchronous/asynchronous, oral or multimedia	PowerPoint, Photostory, iMovie, MovieMaker, Inspiration, videoconferencing
View Images	Students examine both still and moving (video, animations) images; print-based or digital format	PowerPoint, Word, Photostory, Bubbleshare, Tabblo, Flickr
Listen to Audio	Students listen to recordings of speeches, music, radio broadcasts, oral histories, and lectures; digital or non-digital	Podcasts ("Great Speeches in History," etc.), Audacity, Garageband, Odeo, Evoca, Podcast People
Group Discussion	In small to large groups, students engage in dialogue with their peers; synchronous/asynchronous	BlackBoard, discussion in Wikispaces, eboards
Field Trip	Students travel to physical or virtual sites; synchronous/asynchronous	Virtual fieldtrips, Photostory to develop their own virtual

Example Social Studies Activity Types
<http://activitytypes.wmwikis.net>

Conduct an Interview	Face to face, on the telephone, or via email students question someone on a chosen topic; may be digitally recorded and shared	Audacity, MovieMaker, iMovie, digital camera
Artifact-Based Inquiry	Students explore a topic using physical or virtual artifacts	Digital archives
Data-Based Inquiry	Using print-based and digital data available online students pursue original lines of inquiry	CIA World Factbook, Thomas, census data, Excel, Inspire Data
Historical Chain	Students sequence print and digital documents in chronological order	Bubbleshare, Photostory, Moviemaker
Historical Weaving	Students piece together print and digital documents to develop a story	Word, Scrapblog, Google Pages, Historical Scene Investigation (HSI)
Historical Prism	Students explore print-based and digital documents to understand multiple perspectives on a topic	Wikispaces, Google Pages, Inspiration using links

Example Social Studies Activity Types
<http://activitytypes.wmwikis.net>

Activity Type	Brief Description	Possible Technologies
Do a Presentation	Students share their understanding with others; oral or multimedia approach; synchronous or asynchronous	PowerPoint, Photostory, Moviemaker, iMovie, Audacity
Engage in Historical Role Play	Students impersonate an historical figure; live, video-taped, or recorded	Moviemaker, iMovie, Audacity, digital camera
Do a Performance	Students develop a live or recorded performance (oral, music, drama, etc.)	Photostory, Moviemaker, iMovie, Audacity
Engage in Civic Action	Students write government representatives or engage in some other form of civic action	Web, email, videoconferencing

Example Social Studies Activity Types
<http://activitytypes.wmwikis.net>

Learning activity options:

- Read text
- Answer questions
- View presentation
- View images (video)
- Research
- Complete charts/tables
- Group discussion
- Write a report
- Create an illustrated map
- Develop a knowledge web
- Do a presentation
- Design an exhibit

Learning activity options:

- ~~- Read text~~
- ~~- Answer questions~~
- View presentation
- ~~- View images (video)~~
- Research
- ~~- Complete charts/tables~~
- Group discussion
- ~~- Write a report~~
- Create an illustrated map
- Develop a knowledge web
- ~~- Do a presentation~~
- Design an exhibit

Learning activity options:

View presentation	PowerPoint, PhotoStory, Moviemaker, Inspiration
Group discussion	Blackboard, Wikispaces, eboards
Research	Digital archives, Notebook software, index cards
Develop a knowledge web	Inspiration, PowerPoint, Word, Mindmeister
Create an illustrated map	Paper/pencil, Google Earth, PowerPoint
Design an exhibit	Poster board, Wikispaces, PowerPoint, Glogster

Learning activity options:

View presentation	PowerPoint, PhotoStory , Moviemaker , Inspiration
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Learning activity options:

View presentation	PowerPoint
Group discussion	Face-to-face
Research	Digital archives, index cards
Develop a knowledge web	Mindmeister
Create an illustrated map	PowerPoint
Design an exhibit	Wikispaces

Social Studies

- Knowledge building (x 15)
- Knowledge expression
 - Divergent (x 21)
 - Convergent (x 6)



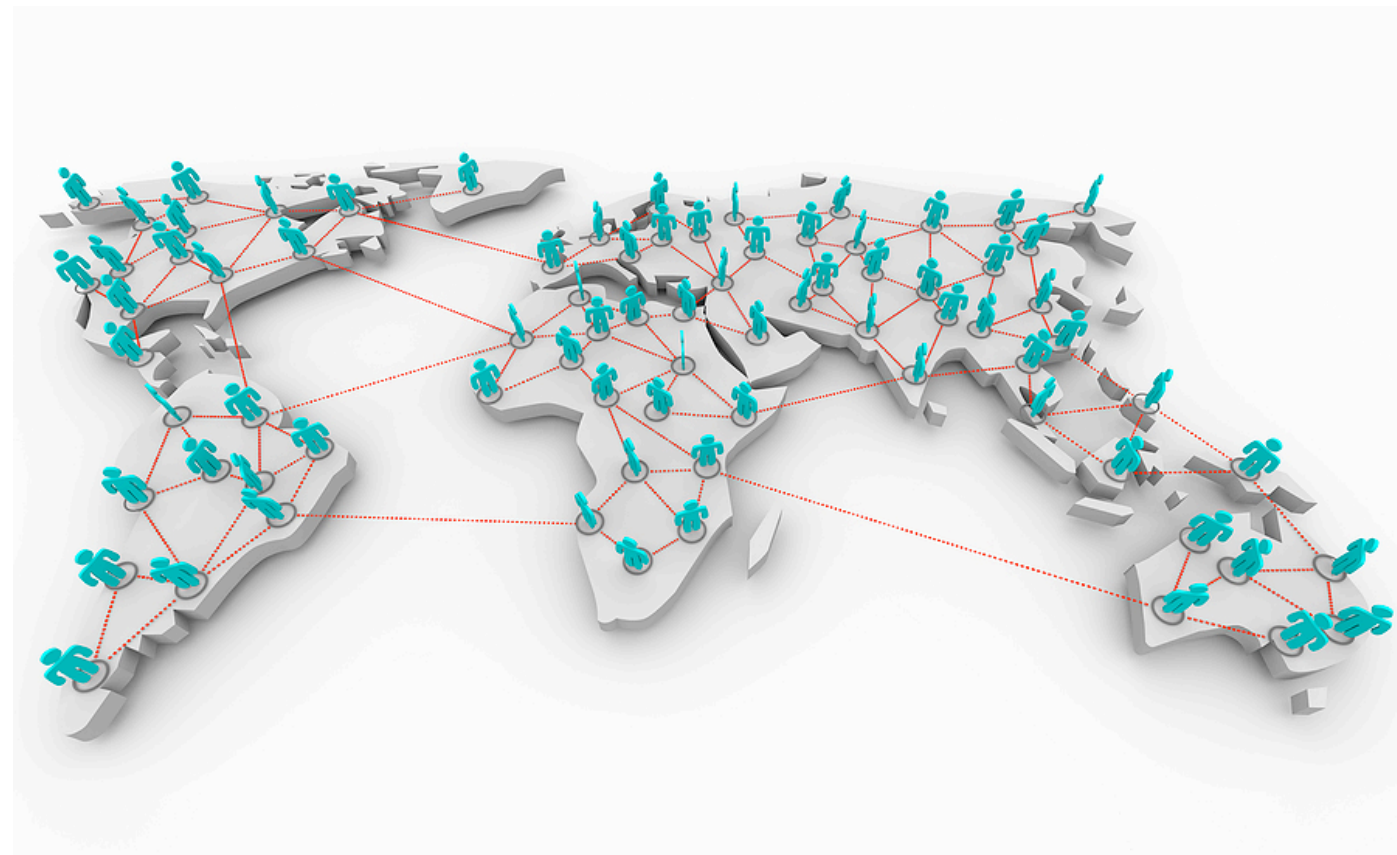
Mathematics

- Consider (x6)
- Practice (x3)
- Interpret (x6)
- Produce (x5)
- Apply (x3)
- Evaluate (x4)
- Create (x4)



World Languages

- Listening (x7)
- Speaking (x13)
- Writing (x 21)
- Reading (x 10)
- Viewing (x 5)





“So, where’s the technology?”

Conduct an Interview	Face to face, on the telephone, or via email students question someone on a chosen topic; may be digitally recorded and shared	Audacity, MovieMaker, iMovie, digital camera
Artifact-Based Inquiry	Students explore a topic using physical or virtual artifacts	Digital archives
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Example Social Studies Activity Types
<http://activitytypes.wmwikis.net>

TPACK



- exploring
- developing
- *assessing*

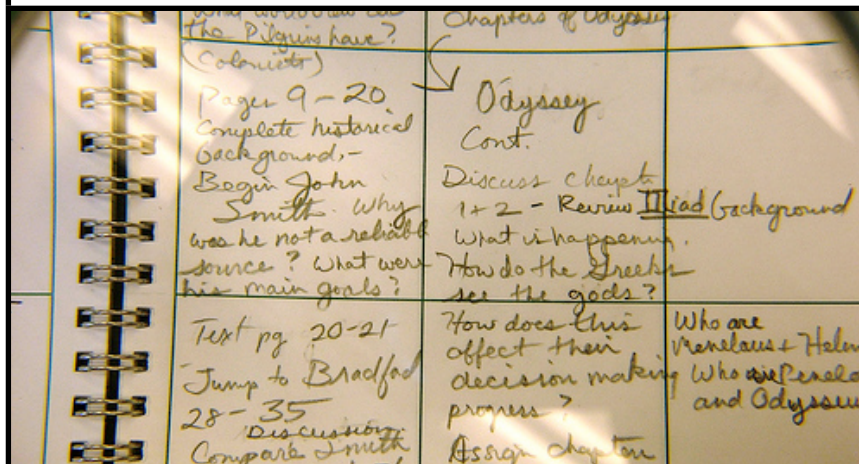
Assessing Teachers' Knowledge



observation



interview

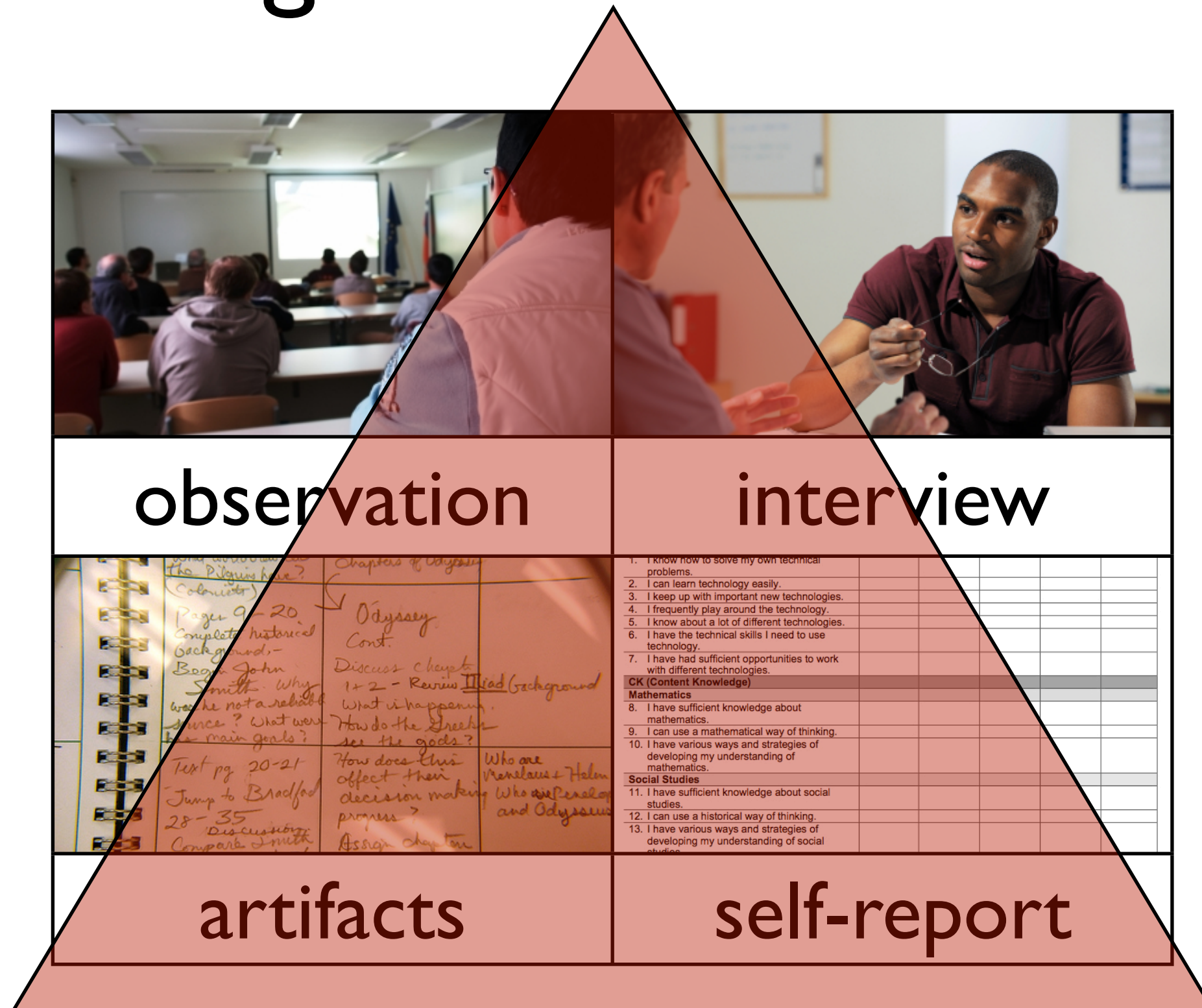


artifacts

1. I know how to solve my own technical problems.						
2. I can learn technology easily.						
3. I keep up with important new technologies.						
4. I frequently play around the technology.						
5. I know about a lot of different technologies.						
6. I have the technical skills I need to use technology.						
7. I have had sufficient opportunities to work with different technologies.						
CK (Content Knowledge)						
Mathematics						
8. I have sufficient knowledge about mathematics.						
9. I can use a mathematical way of thinking.						
10. I have various ways and strategies of developing my understanding of mathematics.						
Social Studies						
11. I have sufficient knowledge about social studies.						
12. I can use a historical way of thinking.						
13. I have various ways and strategies of developing my understanding of social studies.						

self-report

Assessing Teachers' Knowledge



(2 tested rubrics)

Criteria	4	3	2	1
Curriculum Goals & Technologies (Curriculum-based technology use)	Technologies selected for use in the instructional plan are <u>strongly aligned</u> with one or more curriculum goals.	Technologies selected for use in the instructional plan are <u>aligned</u> with one or more curriculum goals.	Technologies selected for use in the instructional plan are <u>partially aligned</u> with one or more curriculum goals.	Technologies selected for use in the instructional plan are <u>not aligned</u> with any curriculum goals.
Instructional Strategies & Technologies (Using technology in teaching/ learning)	Technology use <u>optimally supports</u> instructional strategies.	Technology use <u>supports</u> instructional strategies.	Technology use <u>minimally supports</u> instructional strategies.	Technology use <u>does not support</u> instructional strategies.
Technology Selection(s) (Compatibility with curriculum goals & instructional strategies)	Technology selection(s) are <u>exemplary</u> , given curriculum goal(s) and instructional strategies.	Technology selection(s) are <u>appropriate, but not exemplary</u> , given curriculum goal(s) and instructional strategies.	Technology selection(s) are <u>marginally appropriate</u> , given curriculum goal(s) and instructional strategies.	Technology selection(s) are <u>inappropriate</u> , given curriculum goal(s) and instructional strategies.
“Fit” (Content, pedagogy and technology together)	Content, instructional strategies and technology <u>fit together strongly</u> within the instructional plan.	Content, instructional strategies and technology <u>fit together</u> within the instructional plan.	Content, instructional strategies and technology <u>fit together somewhat</u> within the instructional plan.	Content, instructional strategies and technology <u>do not fit together</u> within the instructional plan.

Available: <http://activitytypes.wmwikis.net/Assessments>



TPCK - Technological Pedagogical Content Knowledge

(Redirected from [Main Page](#))

NEW: Subscribe to the TPACK newsletter by sending a blank email to sympa@lists.wm.edu, with the following text in the subject line: **subscribe TPACK.news FirstName LastName**. You can access recent newsletters by going to [TPACK.news I, Jan 09](#) and [TPACK.news II, Feb 09](#)

NEW: The TPACK survey developed through a collaboration between Iowa State and Michigan State, currently at version 1.1 is available here in [in pdf](#) and [in word](#) formats. Also note the survey developed by [Archambault & Crippen \(2009\)](#) has also been published.

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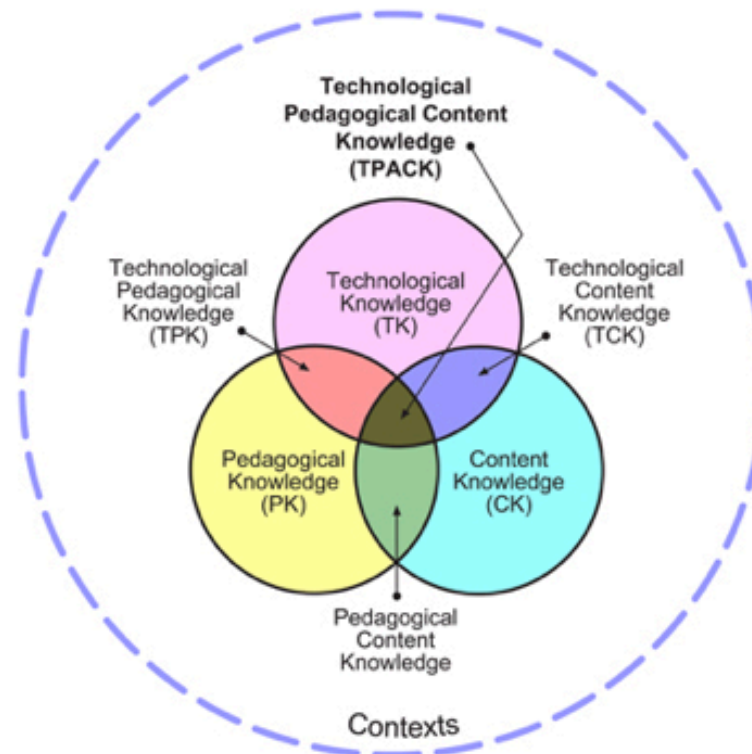
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Click [here](#) for a hi-res version of the TPACK image. You are free to use and reproduce this version of the image in your own non-profit works, including dissertations.


Please cite <http://tpack.org/> as the source.


What is TPACK?

Technological Pedagogical Content Knowledge (TPACK) attempts to capture some of the essential qualities of [knowledge](#) required by teachers for technology integration in their teaching, while addressing the complex, multifaceted and situated nature of [teacher knowledge](#). At the heart of the TPACK framework, is the complex interplay of three primary forms of knowledge: [Content \(CK\)](#), [Pedagogy \(PK\)](#), and [Technology \(TK\)](#). See Figure above. As must be clear, the TPACK framework builds on Shulman's idea of Pedagogical Content Knowledge.

Definitive descriptions of TPACK can be found in [Mishra & Koehler, 2006](#), or through any of the other links in the "Learn more about tpck" box on the right margin of this page, or on the left margin of every page.

<http://www.tpack.org>

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Welcome to the Learning Activity Types Wiki!

This is a virtual place for folks interested in learning to "operationalize TPACK" ([Technology, Pedagogy, and Content Knowledge](#)) via curriculum-based learning activity types ("ATs") to get up-to-date information, and (more importantly) participate in the vetting and refining of the activity types in each of the curriculum areas in which activity type development is happening.

The curricula in which we are developing and refining learning activity type taxonomies appear on the left. Those that have taxonomies available for your perusal and feedback have links to other pages in this wiki. Links to online surveys to use to provide feedback are included on live curriculum area pages.

Thanks for visiting, and please bookmark this site so that you can come back as this wiki grows.

Judi Harris & Mark Hofer
School of Education, College of William & Mary
Williamsburg, Virginia USA

(The "got TPACK?" button displayed above was designed by [Punya Mishra](#) for the [SITE TPACK SIG](#).)

The background of the slide features a large, faint diagram of the TPACK model. It consists of three overlapping circles: a pink circle at the top labeled 'Technological Pedagogical Content Knowledge (TPACK)', a yellow circle at the bottom-left labeled 'Pedagogical Knowledge (PK)', and a blue circle at the bottom-right labeled 'Content Knowledge (CK)'. The intersections of these circles are labeled: 'Technological Knowledge (TK)' for the pink and yellow overlap, 'Pedagogical Content Knowledge (PCK)' for the yellow and blue overlap, and 'Technological Content Knowledge (TCK)' for the pink and blue overlap. The central intersection of all three circles is labeled 'Pedagogical Content Knowledge'. A dashed purple circle surrounds the entire Venn diagram, with the word 'Contexts' written below it. Arrows point from the labels to their respective regions in the diagram.

TPACK Newsletter

sympa@lists.wm.edu

In subject line:

subscribe tpack.news *YourFirstName YourLastName*

A woman with dark curly hair is shown in profile, measuring a light-colored shirt with a yellow tape measure. The background is a soft, out-of-focus white. The text is overlaid on the right side of the image.

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