Gamification, Interdisciplinarity, and Learning Networks:

A Holistic Approach to Professional Development in Energy Industry.

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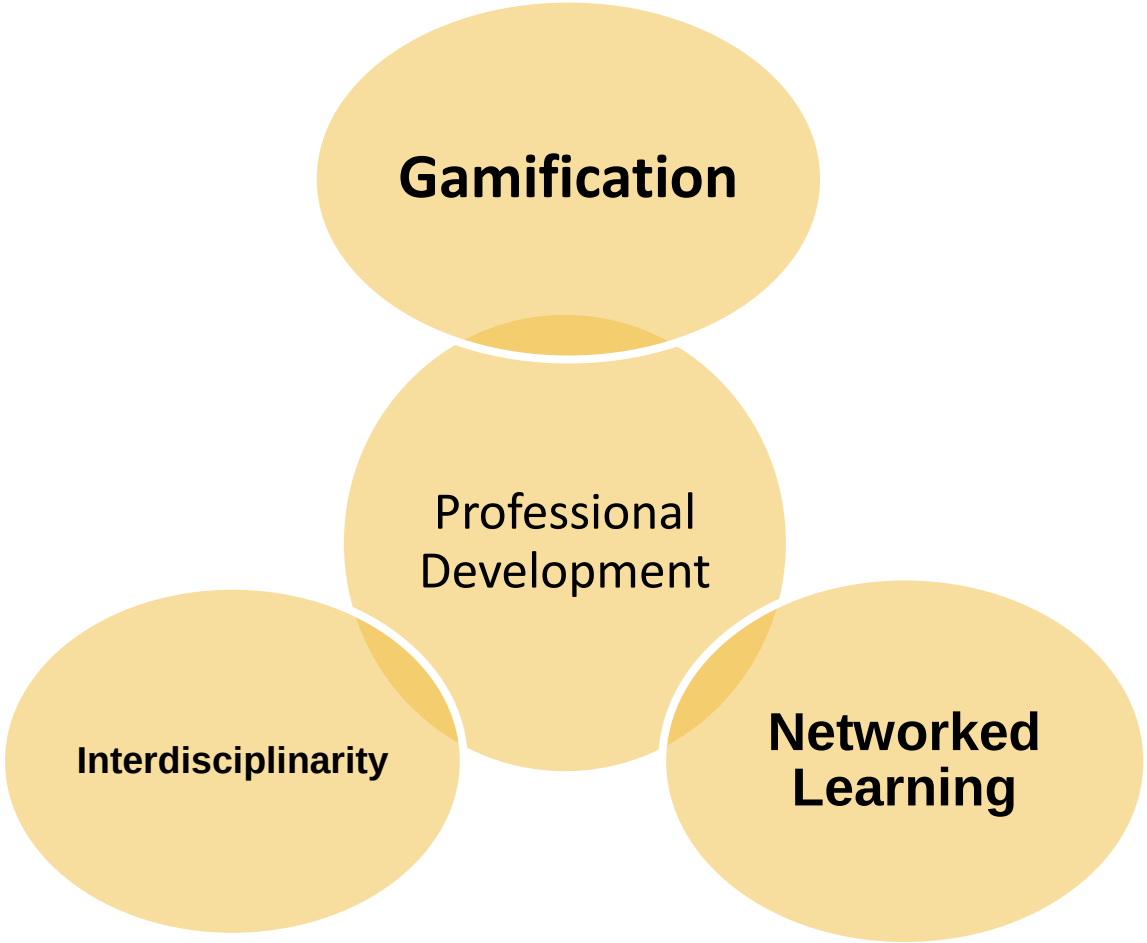
Introduction



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Reimagining professional development for the 21st century

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Research Aims

- **Enhancing Pedagogical Practice:**

Identifying effective practices for engaging online learning experiences.

- **Developing Assessment Methods:**

Creating robust tools to evaluate networked learning.

- **Boosting Engagement:**

Using gamification to sustain motivation in professional development.

- **Promoting Equity and Accessibility:**

Ensuring all professionals have access to learning networks.

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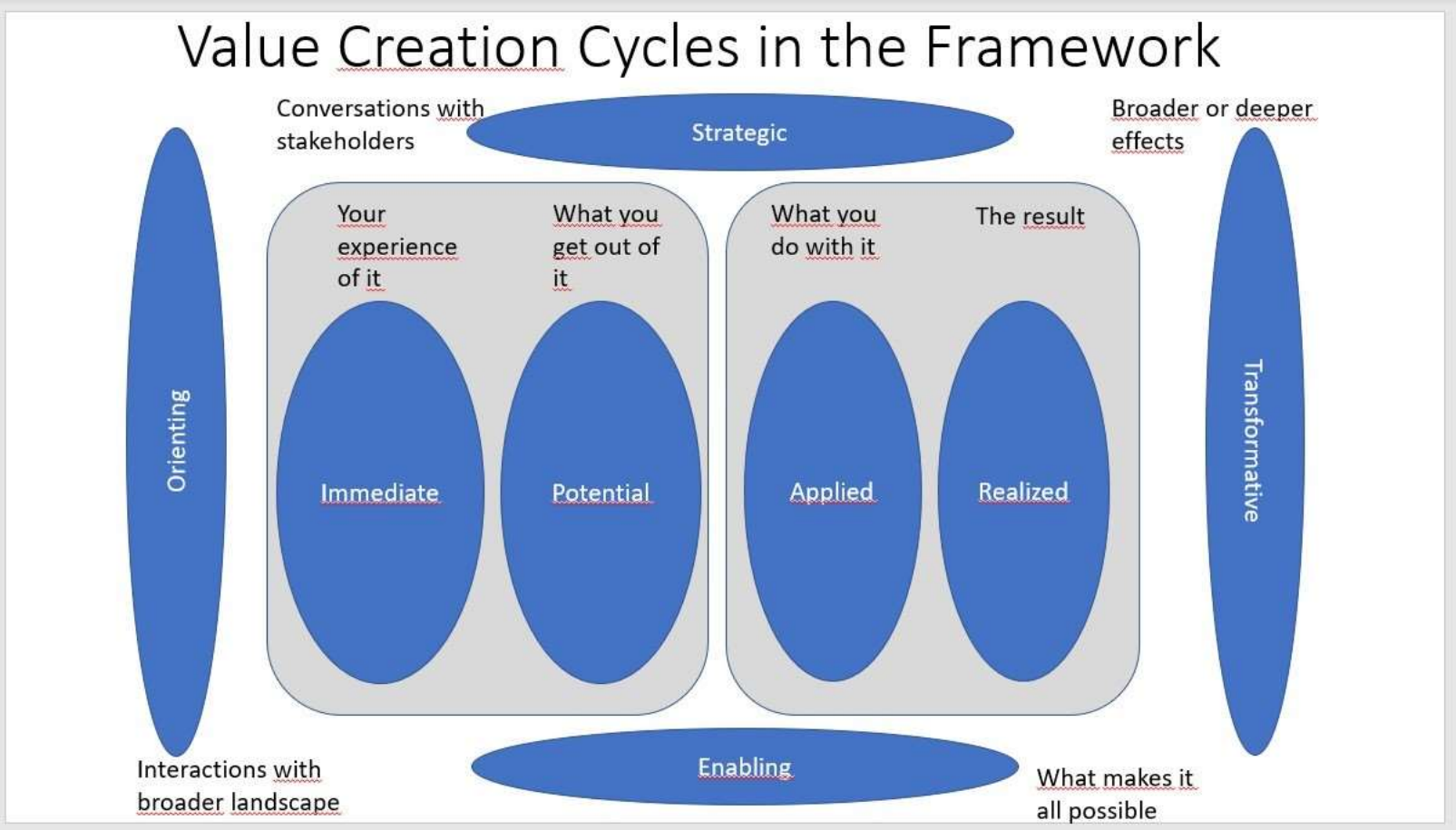
Theoretical Framework

- **Networked Learning:**

Utilizing ICT to connect learners, tutors, and resources.

- **Value Creation Framework:**

Understanding the benefits of learning networks through various value cycles.



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Methodology

Literature Review:

Analyzing existing studies on networked learning and professional development.

Case Studies:

Investigating real-world applications in the energy management systems industry.

Gamification Interventions:

Implementing and evaluating gamification within online learning networks.

Literature Review Findings

Networked Learning Contexts: Formal and informal settings facilitating professional growth.

Social and Individual Attributes: Autonomy, collaboration, and trust within learning networks.

Domains: Applications in various fields, including higher education and industry.

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Case Study Insights

09-10-2020

Case Study Insights

- **Energy Management Systems:**
  Challenges and opportunities in knowledge adoption and transfer.
- **Learning Culture and Incentives:**
  Importance of incentives and technologies in professional learning environments.
- Motivations and Barriers:

  highly motivated to engage in networked learning due to the rapid technological advancements

  Despite the high motivation, several barriers were identified, including the lack of time, insufficient support from management, and the challenge of integrating learning into daily workflows.
- Role of Technology:

  Integrating advanced technological tools such as learning management systems (LMS), social media platforms, and virtual collaboration tools plays a vital role in facilitating networked learning.

Gamification in Learning Networks

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Gamification in Learning Networks

- **Value Creation Theory:** Enhancing motivation through gamification elements.
- **Interventions:** Designing and testing gamified learning activities within Answer-EWI platform.

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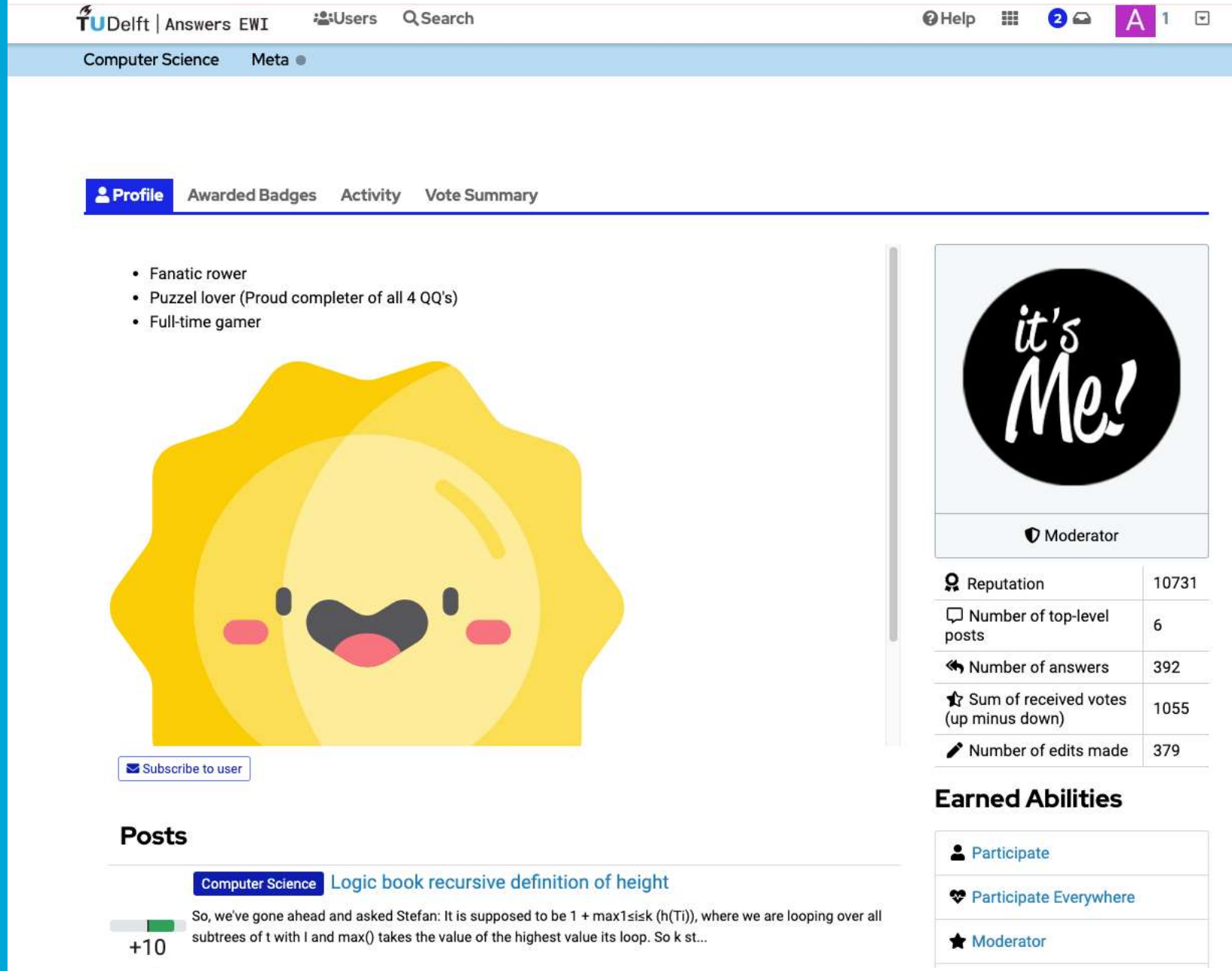
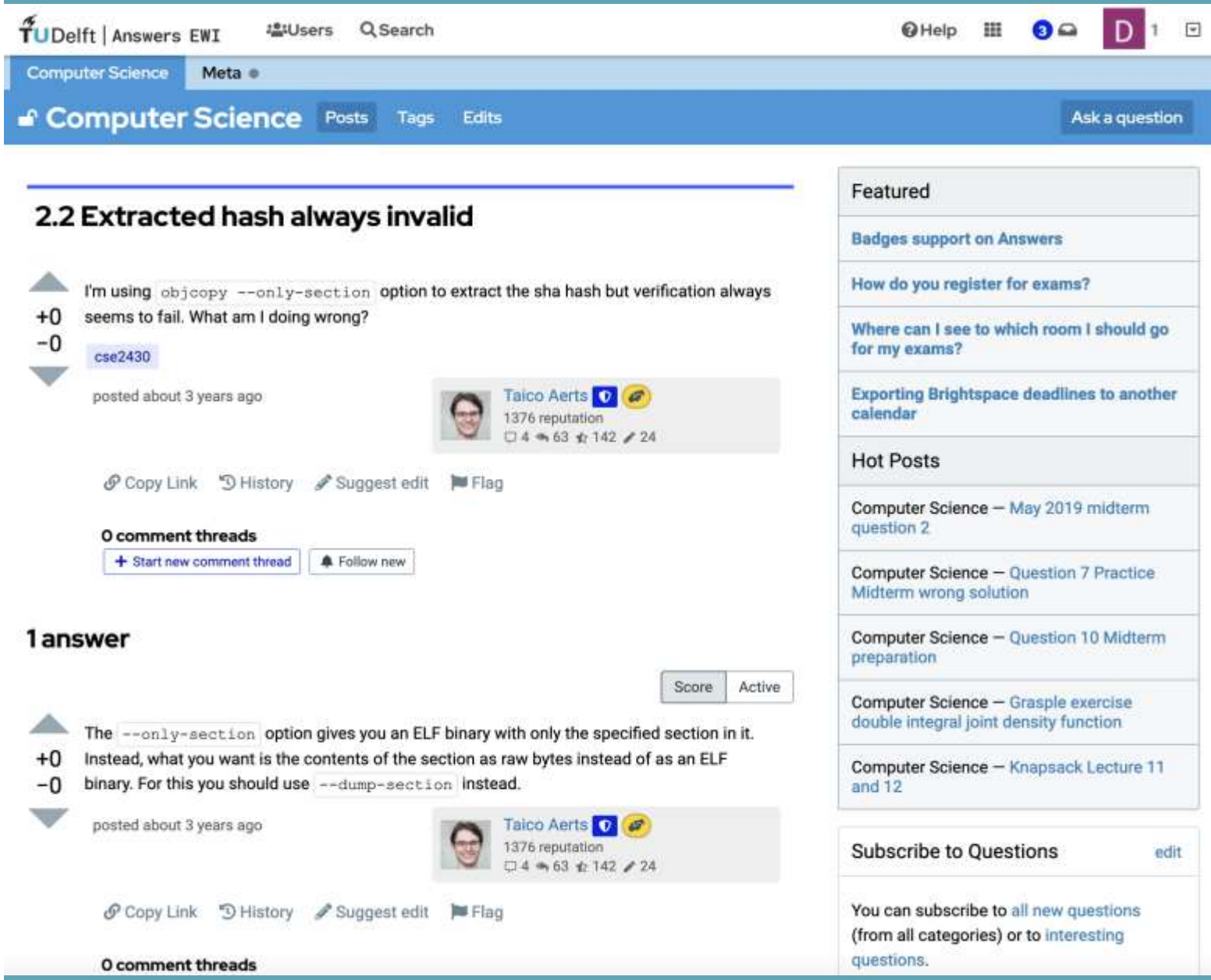


Our variables

- Engagement and Interaction Evaluation
- Emotions and Experience



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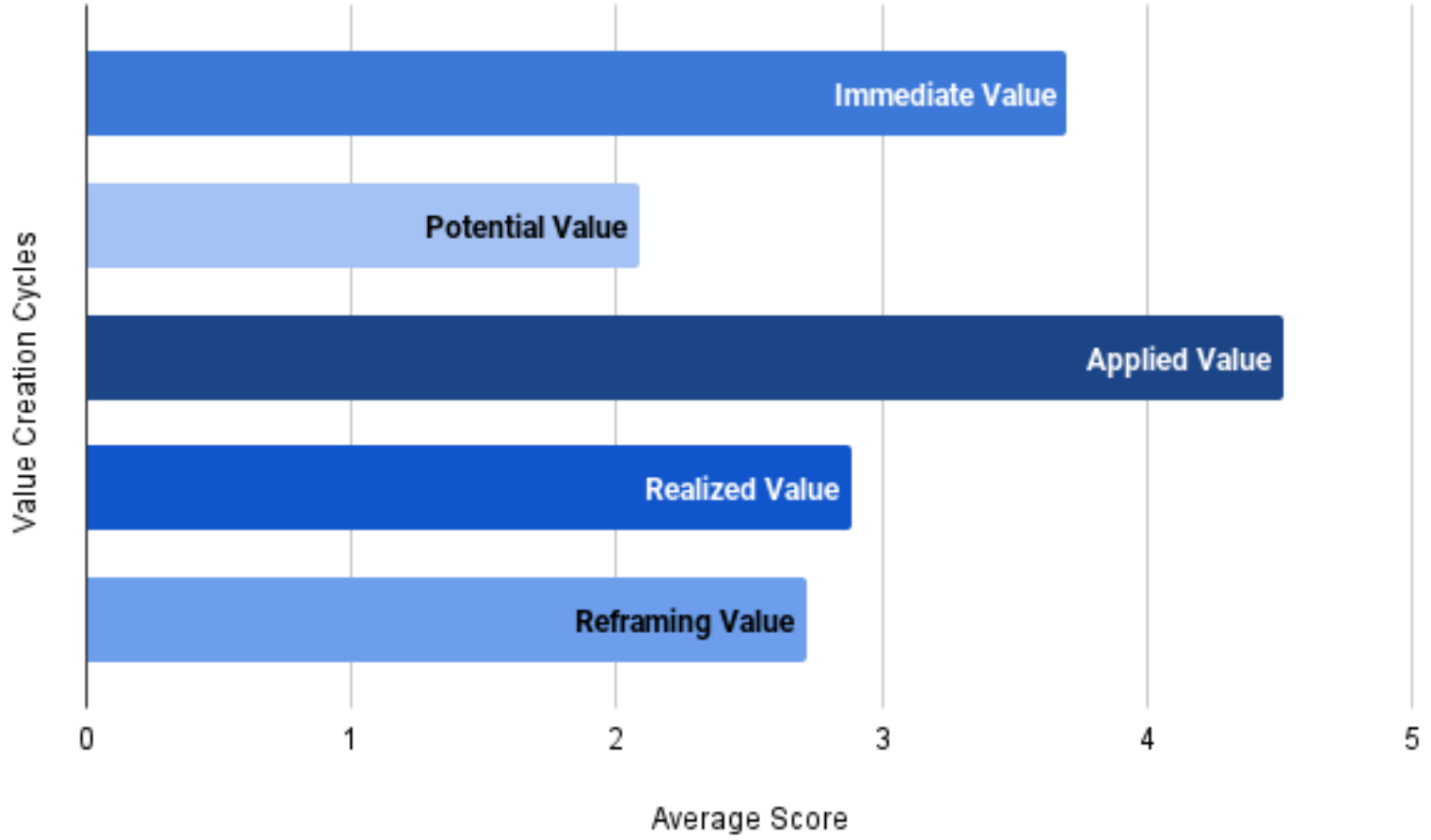
Value Creation Assessment

- Results indicate that participants had mixed but generally positive reception of the Answers platform.



Motivation and Experience

- **Relatedness:** Scored -0.30, indicating the platform did not significantly enhance feelings of connectedness.
- **Interest/Enjoyment:** Scored 2.64, suggesting students enjoyed using the platform.
- **Perceived Choice:** Scored 0.82, indicating some level of autonomy felt by students.
- **Pressure/Tension:** Scored 0.22, suggesting minimal stress associated with platform use.
- **Effort:** Scored 2.09, indicating students were willing to invest effort into using the platform.

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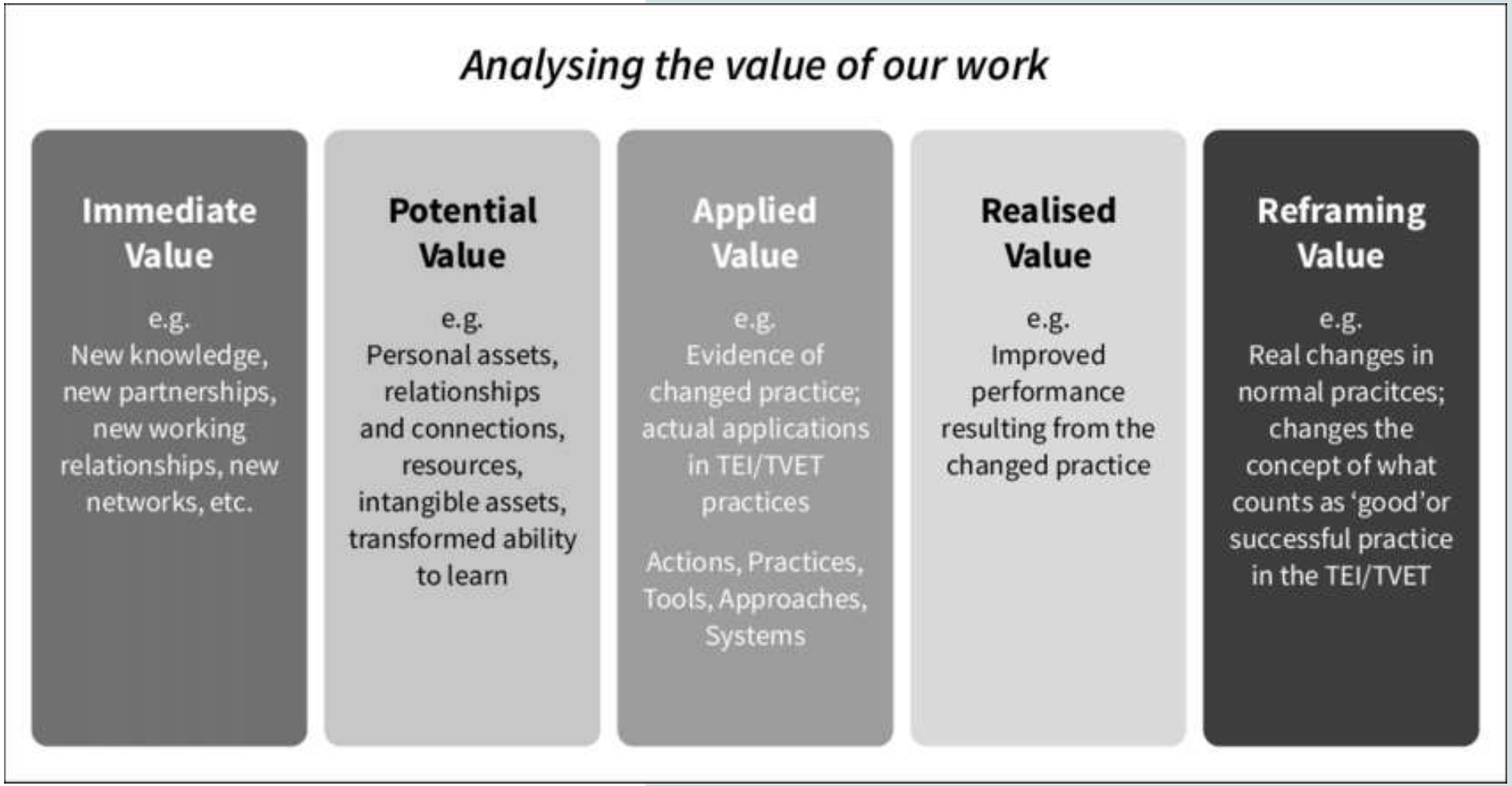
IMI Subscale	Average	Std Dev
Relatedness	-0.30	0.59
Interest/Enjoyment	2.64	0.87
Perceived choice	0.82	0.78
Pressure/Tension	0.22	0.90
Effort	2.09	071

Assessment Tools

Value Creation Questionnaire: Developed to measure the impact of networked learning.

Testing: Applied in different settings, focusing on online learning environments.



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Results and Implications

Theme	Description	Quotes
No Practical Application	Participants felt the course lacked practical knowledge and application opportunities.	"Didn't get enough practical knowledge or the chance to exercise what I learned, while working in the construction industry"
Expectation Mismatch	Participants had expectations about course content and format that were not met.	"I expected a much different course. There were very few video lectures and notes."
No Impact on Career	Participants felt the course had little impact on their career or personal development.	"It didn't have a big impact on my career or personal development."
Course Difficulty	Participants found the course challenging or too complex.	"The first module was way too complicated for me."

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Results and Implications

Theme	Description	Quotes
Knowledge Enrichment	Participants gained new knowledge and insights in various fields.	“It broadened my knowledge on water purification methods and gave me insight in how calculations such as for pressure within Reverse Osmosis worked.
Skill Development	Participants reported acquiring new skills and enhancing existing ones.	It helped me gain a new skill and knowlage.
Confidence Boost	Engagement in courses increased participant's confidence in their abilities and knowledge.	It gave me the confidence and knowledge that I lacked on the subject.
Career Advancement	Participants felt the courses assisted them in their career growth and development.	Participation in the Coursework, helped me acquire a lot of knowledge in the field of biomedical engineering.

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Results and Implications

Pedagogical Practices:
Effective strategies for online professional development.

Engagement and Motivation:
Positive impact of gamification on learner engagement.

Equity and Accessibility:
Strategies to overcome barriers and promote inclusive learning.

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Challenges and Solutions

- **Sustainability:**
  Ensuring long-term engagement in learning networks.
- **Assessment:**
  Developing comprehensive tools to measure learning outcomes.
- **Technology:**
  Leveraging innovative tools to support seamless knowledge integration.

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Conclusion

- **Contributions:** Enhancing professional development through interdisciplinary, gamified, and networked learning approaches.
- **Future Work:** Further research to refine assessment tools and expand gamification strategies

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Thank you for your attention

Contact information

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