



Athabasca University 

SCHOOL OF COMPUTING & INFORMATION SYSTEMS

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# **A Framework for Integrating Motivational Techniques in Technology Enhanced Learning**

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# Motivation

- Motivation is the reason that someone engages in a certain behaviour
- Motivation is a key factor in education
- Lot of research has been done by educational psychological researchers on motivational aspects in the educational domain
- These researches resulted in several theories and models
- Based on such theories and models, learning systems have been developed that use particular motivational techniques
- However, most systems include only one or few such techniques and typically they assume that the technique(s) are motivational for all learners alike

# Motivation

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- However, learners are motivated differently and what is motivational for one learner can be demotivational for another learner
- We aim at providing personalization based on motivational aspects
- The first step in doing so is to develop a framework of motivational techniques that can be used in learning systems

# Aim

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How to build a framework of motivational techniques that can be easily integrated into different learning systems?

- The framework should
  - Include many diverse motivational techniques in order to motivate different learners
  - Include motivational techniques that are domain-independent and course-independent in order to make it easy to integrate them into existing systems and courses

# Framework for Incorporating Motivational Techniques

- Selected 11 motivational techniques
- Techniques are not new
- Techniques are based on motivational theories and models and most of them have already been successfully implemented in learning systems
- Techniques have been selected based on literature review and with respect to their capabilities to motivate learners
- Technique has to be domain-independent and course-independent
- Looked into the relationships of these techniques

# Progress Timeline

## ■ Aim:

1. Provide learners with information about their progress in the course based on pre-defined milestones (e.g., assignments, quizzes, exams, projects, etc)
2. Show them their progress in relation to progress on the class (anonymous and accumulated)

## ■ Why motivational?

- assist with time management → increases confidence
- motivate learners to learn in the same (or quicker) pace as the overall class

# Progress Timeline

- When can this technique be demotivational?
  - If learners have fallen behind, they might get impression that they cannot catch up
  - If too many milestones are remaining for them to complete
  - If nobody is at the same level as the learner
- Requirements for course and system:
  - Measurable milestones
  - Tracking of learners' completion of milestones
  - Access to start and end date of all learners

# Progress Annotation

- Aim:
  - Display to the learner their progress through the course content:
    1. Allow learners to tag their active position in the course content
    2. Allow learners to tag the completed content
- Why motivational?

Learners can view and track their progress  
Helps in time management  
→ increases confidence and satisfaction on achievements
- When can this technique be demotivational?
  - If learners feel they are not progressing fast enough, even though they put in a lot of effort
- Requirements for course and system
  - Course must have content



# Ranking

## ■ Aim:

- Rank learners based on certain criteria (e.g., performance, participation, etc.)

## ■ Why motivational?

Show statistics and allow learners to compare themselves  
→ Increases satisfaction

Some learners will use this information to continually improve

# Ranking

- When can this technique be demotivational?
  - If learners feel they should be doing better than they are
  - If they don't feel as though they have a sense of control
  - Since each ranking can be motivational for some learners but demotivational for others, personalization is an important issue
- Requirements for course and system:
  - There must be a minimum number of people enrolled
  - Criteria to use for ranking and track the respective achievements of learners based on the criteria

# Awards and Achievements

- Aim:
  - Provide learners with incentives and/or recognition
  - Based on achievements, scales or levels (e.g., different types of forum users)
- Why motivational?
  - rewards the learner and provide recognition to the learner → increases satisfaction
- When can this technique be demotivational?
  - If the learner finds flaws in the methodology
  - If the learner does not get the recognition that he/she believes to deserve
- Requirements for course and system:
  - Components that associate awards/achievements with them

# Posting Solutions

- Aim:
  - Post best solutions to problems/exercises in the course
- Why motivational?
  - provides learners with recognition if their solutions are posted → increases satisfaction
  - supports learners who may not have been able to fully answer on their own
- When can this technique be demotivational?
  - If a learner believes that his/her solution was better than the posted solution
  - If a learner never has the best solution
- Requirements for course and system:
  - Course must have graded activities
  - Course must be paced so that all learners have the same deadline

# Goal Setting

## ■ Aim:

- Encourages learners to set a plan to meet an objective, which causes learners to think about and understand various component of the course
- Possible goals can be:
  - Achieve a certain grade
  - Planning timelines
  - Beat a certain % of class
  - etc.

## ■ Why motivational?

- allows learners to establish a connection between the learning environment and the learner's personal goals → comfort and preparedness → increases relevance

# Goal Setting

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- When can this technique be demotivational?
  - When the learner dislikes planning or is overwhelmed
- Requirements for course and system:
  - The course must have one or more course components to set goals based on

# Knowledge Agent

- Aim:
  - An agent that is responsible for directing learners to the most appropriate information/content based on their request
- Why motivational?
  - supports and empowers learners to find/navigate to the most appropriate learning material → increases confidence
- When can this technique be demotivational?
  - If the agent does not answer the question
- Requirements for course and system
  - The agent must have access to various course information/materials

# Caring Agent

## ■ Aim:

- An agent that is responsible for emotionally supporting, identifying with and assisting learners
- Displayed as avatar
- Common activities:
  - Advise learners on deadlines
  - Giving feedback to learner's progress
  - Providing hints if learners try to answer questions/problems
  - Etc.

## ■ Why motivational?

- supports and empowers learners → increases confidence and satisfaction



# Caring Agent

- When can this technique be demotivational?
  - If it does not proper support the needs of a learner
  - If the learner is distracted by the agent
  - If the agent is perceived as annoying
- Requirements for course and system:
  - Agent needs access to information about the learner and course

# Discussion Forums

- Aim:
  - Tool for asynchronous communication
- Why motivational?
  - Empowers and supports learners by facilitating peer assistance
  - Promote active participation of the learners
  - Increases confidence and attention
- When can this technique be demotivational?
  - If the forum lacks content
  - If the amount of content is overwhelming
  - Some learners might not feel comfortable to communicate in a “public” forum
- Requirements for course and system:
  - System needs to allow the integration of a discussion forum

# Communications

- Aim:
  - Technique to communicate course information, for example, through emails, LMS messages, SMS, etc.
  - Can include announcements, solutions to exercises, but also personalized messages such as updates to their goals, progress, etc.
- Why motivational?
  - keeps learners informed
  - provides feedback/reinforcement to the learner
  - Increases confidence and satisfaction

# Communications

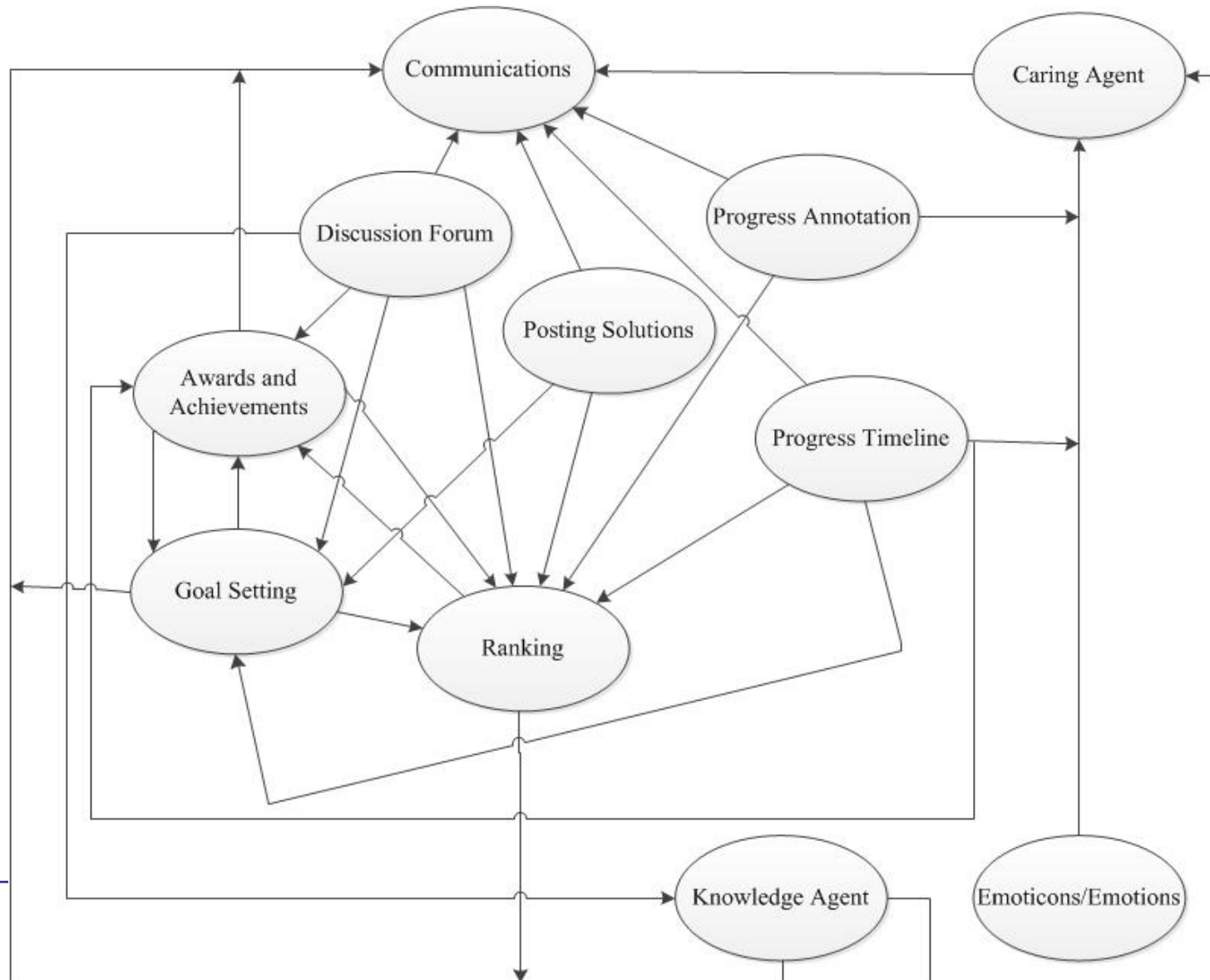
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- When can this technique be demotivational?
  - If they contain too much content
  - If they are sent too frequently
  - If they are found to be spam
- Requirements for course and system:
  - Course must have content to communicate

# Emoticons/Emotions

- Aim:
  - Pictorial representations of facial expressions and can be used to display extra meaning to the learner
  - Emoticons can be used
    - Add meaning to course content
    - Response to quizzes, exercises, exams, etc.
  - Emotions can be used by avatars (caring agents)
- Why motivational?
  - provides feedback and reinforcement to the learner → increases satisfaction
- When can this technique be demotivational?
  - If they are found to be annoying, unrelated or insulting
- Requirements for course and system:
  - The course needs to have content/activities for emoticons to be integrated

# Relationships between Techniques



# Conclusion

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Our proposed framework aims at providing a set of course and domain independent motivational technique which can easily integrated into learning systems and courses

→ learners can select between different motivational techniques that can increase their motivation at different stages and in different situations

→ This framework is the basis for automatically providing learners with personalized motivational techniques that fit their motivational preferences and current situation