Wicked questions and developing Leadership competences in a network society

Preparing young professionals for the future

Block 1 (Academic):

- Global challenges, trends and models for the development of organizational competence in PM

Dr. Liesbeth Rijsdijk and Maike de Bot (MA)

Windesheim University of Applied Sciences, Social Innovation Research Program,

Zwolle, The Netherlands

e.rijsdijk@windesheim.nl

Abstract- Due to globalization, rapid and disruptive changes and technological developments, society and organisations are increasingly confronted with developments and challenges which are more and more "wicked" in nature. Global warming, refugees, an increasing gap between rich and poor, food security and depletion of resources to name a few. These challenges are difficult, if not impossible, to solve, and for each solution, due to interdependencies, other questions and challenges/problems arise. In this paper we show results of the development and validation of the 'Wicked Explorer' to assess the nature and level of "wickedness" of a challenge. In addition, we discuss necessary leadership competences to address wicked challenges, within the context of a network society, and relate these to relevant, recent leadership theories. Concluding the paper, a new educational concept of the Bachelor program Global Project and Change Management of Windesheim Hours College, the Netherlands is presented as offered at Windesheim University of Applied Sciences. The educational concept is called The Value Creators, a learning community facilitating students to address wicked challenges and develop essential 21st century skills like social responsibility, collaboration and leadership, creativity and innovation, critical thinking and problem solving in four areas: Civil Society, Global Health, Social Entrepreneurship and Urban Dynamics. We developed our own methodology for value creation: The E-model. It is based on Design thinking, connectivism [1] and Theory U [2]. It describes 4 essential phases to lead interdisciplinary teams through value creation when dealing with wicked challenges and complexity.

Keywords—wicked questions, complexity theory, leadership styles and competences, network collaboration, education

I. INTRODUCTION

Due to globalization, rapid and disruptive changes and technological developments, the society and organisations are being confronted with global developments and challenges which are more and more "wicked" in nature. Global warming, refugees, widening gap between rich and poor, food security and depletion of resources to name a few. These challenges are difficult, if not impossible, to solve, and for each solution, due to interdependencies, other questions and challenges/problems arise. This paper shows results of the development of a valid Wicked Explorer to assess the nature and level

of "wickedness" of a challenge. Additionally, the Wicked Explorer can be used as an assessment tool for continuous learning as a team. We also look at leadership competences needed to address wicked challenges. Licht [3] uses the term "network manager", someone in a network collaboration who is responsible for "directing" or "staging" and not for serving the interests of one of the partners in the collaborative network. The term network manager suggests that there are multiple parties who in collaborative consultation co-creates and innovates. In this article, the term network manager is applied for the professional in charge of leading the approach of a wicked challenge as more commonly used terms like project manager, project leader or process manager are considered inadequate. Additionally, the word *challenge* is used instead of the word *problem* to indicate the broader aim of improving a situation next to solving what is wrong.

II. THE WICKED EXPLORER

A. Wicked questions

Rittel and Webber [4] are one of the first to distinguish wicked problems from tame, based on the number of uncertainties involved as well as the unsolvable nature of a wicked issue. They argue that science has developed to deal with tame problems, whereas problems of social policy are "wicked". One of the characteristics of wicked problems according to them is that there is no definitive formulation of a wicked problem, because "(….) The formulation of a wicked problem *is* the problem! The process of formulating the problem and of conceiving a solution (or re-solution) are identical, since every specification of the problem is a specification of the direction of the treatment that is considered. Thus, if we recognise deficient mental health services as part of the problem, then- trivially enough- "improvement of mental health services", is a specification of solution. If as the next step, we declare the lack of community centres one deficiency of the mental health services system, then "procurement of community centers" is the next specification of solution. If it is inadequate treatment within community centers, then improved therapy training of staff may be the locus of solution, and so on." [4; p. 161). What this shows is that a "system-approach" is very relevant for wicked challenges. There is not one solution, and to address a wicked challenge you need to act at

a system level rather than addressing single elements within the system.

All authors that write about wicked challenges [5-8] agree that wicked problems can never be solved completely, due to interdependency with related issues and underlying issues that may only surface at a later stage when trying to tackle the main issue. Another characteristic of wicked challenges is that they cut across hierarchy and policy domains [7], that gaps need to be bridged either caused by borders of nations, cultures, interests, disciplines or institutions [8] and that there are a variety of opinions, believes and desired solutions present in the minds of the stakeholders involved, which also can be conflicting [4; 8].

Literature research has led to an enumeration of characteristics of tame versus wicked challenges (table 1). This list is to be considered to indicate qualifiers of the extremes of a spectrum.

*Table 1: characteristics of tame versus wicked challenges*

Tame challenges	Wicked challenges
1. Issues of any kind	1. Social cultural issues or related
2. Limited group of stakeholders and clear interests	2. Many stakeholders and interests
3. Low level of interdependence	3. High level of interdependence between organisations, departments, persons and issues
4. Clear definition of the issue at hand for which a solution is likely to be found.	4. Solution is not available or will not cover the challenge completely and might raise new issues.
5. Clearly defined issue with information on it easily available	5. Contradictory or incomplete information
6. Focusing on one organisation and/or target group.	6. Crossing boundaries of organisations, branches, countries and/or target groups.

Challenges in practise are often not tame nor wicked, but have a certain degree of wickedness. Derived from the Cynefin framework developed by [9], two additions are made to enrich the dimension ranging from tame to wicked. The Cynefin framework is based on complexity theory and is to describe challenges and determine matching solutions. It holds five domains or challenges: obvious, complicated, complex, chaotic and disorder. The fifth central domain, disorder, is an addition to characterize problems that do not fall into one of the other domains [10]. In situations as such, "(….) multiple perspectives jostle for prominence, factional leaders argue with one another, and cacophony rules. The way out of this realm is to break down the situation into constituent parts and assign each to one of the other four realms. Leaders can then make decisions and intervene in contextually appropriate ways." [10: p. 4].

Figure 1 shows the framework made up of the original four types of challenges. One of the characteristics on which the challenges differ is the extent to which a cause and effect can be observed. For obvious challenges this link is easy to establish, for complicated challenges analysis is required. Determining the link between cause and effect can only be done in retrospect for complex challenges. The link cannot be found for chaotic challenges. The second characteristic on which the challenges are differentiated is

order versus unordered leading to four different domains. For the Wicked Explorer literature research and research among senior project leaders has let to dimensions of wickedness to characterize the nature and level of wickedness without restricting boundaries that force to select a certain domain or type of challenge. By employing the Wicked Explorer to determine the nature and level of wickedness the outcome can more precisely be linked to leadership competence profiles and suitable tools and techniques in order to deal with the challenge at hand.

Figure 1: The Cynefin model

Source: http://aohbtb.weebly.com/cynefin.html
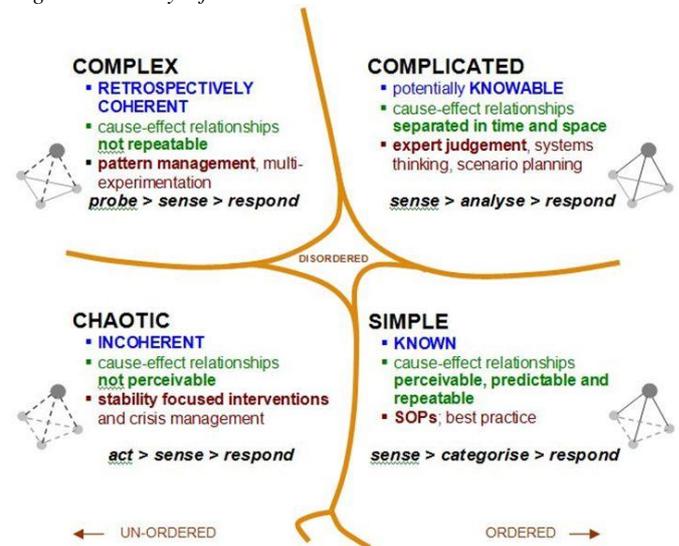
B. Developing the Wicked Explorer

The Wicked Explorer aims to determine the nature and extent of wickedness of a challenge [11]. A questionnaire was considered the appropriate method in order to assess a problems position regarding the dimensions as displayed in table 1.

The research conducted to compile the questionnaire was carried out between November 2015 and May 2016. Nine Dutch senior project leaders were interviewed using a topic list supporting a semi-open interview method. The topic list used was based on a literature review regarding characteristics of wicked problems (see Table 1). Next to items related to the characteristics of wicked challenges, leadership competences and success criteria for wicked challenge projects or programs were added. The interviewees were asked to add characteristics of wicked challenges to those already identified by the literature review. The senior project leaders were initially recruited via the IPMA network and subsequently contacted through a snow ball method of having the participating senior project leaders invite fellow senior project leaders. The interviews, taking 1.5 hours on average, were carried out in either Dutch or English to align with the preferred language of the senior project leader. From all interviews audio recordings were made and its content was transcribed and analyzed using a mix of systematic and open coding. To determine if the interviewees had experience with challenges that can be considered wicked, the coding was based on the seven characteristics as retrieved from the literature research [11].

The results of the interview show overlap for the most part in the characteristics indicating wickedness derived from literature with those mentioned by the senior project leaders. The senior project leaders input deviated from the literature regarding the social cultural nature of wicked problems: The senior project leaders consider wicked challenges not to be limited to social-cultural issues only. Additional deviation from literature was found in the dimension of conflicting and incomplete information. This characteristic as well was found not to be restricted to problems of a wicked nature. The interviewees provided two additional characteristics of wicked challenges. The first characteristic brought in by practical experience of wicked challenges is an expansion of the diversity as mentioned in Table 1. Added are diversity in stakeholders, in interests, in information and in language used. The latter not referring to national language variation but to commonly used expressions and phrases unique to a certain organization or sector. The second addition concerns the approach of wicked challenges. All interviewees pointed out that the approach suitable to handle wicked challenges is fundamentally different from other problems due to the wicked nature of the problem. A conventional project approach, indicating steps to be taken in order to reach a preset goal, will not acknowledge to a sufficient extent this wicked nature.

Draft Wicked Explorer

As mentioned the interview results were transcribed and analyzed. The outcomes resulted in seven dimensions (table 2) that are considered scales of the questionnaire. These were then converted to items for a questionnaire. Every scale is covered by 5 to 7 items.

Table 2: scales of the Wicked Explorer questionnaire

	Dimensions	Items at the wicked end of the spectrum
1	Boundary crossing	diversity in countries of origin, regions, departments and/or organisations, different mother languages
2	Interdependency	of a high number of stakeholders, including institutions and organisations, regarding information, legislation, finances etc.
3	End goal	is not or not clearly defined, is open to change, does not encompass the complete scope of the challenge
4	Influence and context	high influence of political, organisational and other contexts
5	Information and interests	info is to derived from a variety of sources providing partly info and possible unreliable info, which may be influenced by their interests.
6	Relevance to society	on any kind of subject related to society interests
7	Approach, process and result	the challenge is unlikely to be dealt with via a planned, well defined approach.

Items were measured on a 5-point scale consisting of the following response categories: (1) totally disagree; (2) disagree; (3) neutral; (4) agree and (5) totally agree. The scores on the items determine the projects position per scale and therefore per dimension.

Pilot Wicked Explorer

Fifty-nine project leaders and project managers were invited to fill out the first draft of the Wicked Explorer to assess the validity and reliability of the questionnaire. These project leaders were contacted via the senior project leaders who were interviewed. Selection criteria were (1) experience with complex to wicked problems and (2) the willingness to give feedback on item of the questionnaire. The feedback was requested as a check of the wording of the item and its relevance to the dimension it derived from. Through an introduction text the respondents were briefed on wicked challenges and were asked to fill out the questionnaire by keeping one of their projects in mind. These were either projects they were currently carrying out or had worked on in the past. Questions were included to learn about the project or program the respondent had in mind.

The majority of the 59 respondents were holding a position as either program manager / program director (22) or as project leader (21). The other 16 respondents held different positions, like consultant, delegated sponsor and program architect.

SPSS version 22 was used to analyze the data. A reliability test was done by using Cronbach Alpha. Reliability scores of .70 and above were considered acceptable. The scores ranged from .55 to .79 (table 3).

Table 3: Cronbach Alpha scores per scale from the pilot version of the Wicked Explorer questionnaire

	Scales	# items	Cronbach Alpha
1	Boundary crossing	5	.58
2	Interdependency	5	.76
3	End goal	6	.58
4	Influence and context	7	.55
5	Information and interests	7	.70
6	Relevance to society	6	.77
7	Approach, process and result	6	.79

Frequency analysis of the scores per item suggest a limited variance in the research group considering the types of challenges, with a strong prevalence of what is thought of as complicated and complex challenges. The scores therefore might prove more reliable with a pilot group including wicked challenges. A factor analysis was carried out to determine if Cronbach Alpha's scores could improve. The outcomes showed that all three scales with a Cronbach Alpha below .7 improved due to different loading on items included (see table 4). Based on the factor analysis, the dimension Boundary Crossing was limited to organisational/department/discipline boundaries, deleting the items relating to language and country boundaries. The dimension End Goal was limited to two questions relating to "(not) well defined" and "fixed/not fixed" and the dimension relating to context was split into two dimensions: a dimension relating to economic/environment context and a dimension related to Technology and Knowledge [11].

Table 4: Cronbach Alpha and Pearsons R^2 scores after adjustments made to specified scales.

Scales	# items	Cronbach Alpha	Pearsons R^2
Boundary crossing			
- Organisation/culture	3	.70	
- Country boundaries	2		.38
End goal			

- Not well defined nor fixed	2		.48
- Unclear/over encompassing	4	.63	
Context			
- Economic/environment	3	.62	
- Knowledge/Technology	2		.45

Feedback from the respondents on questions

To improve the validity of the questionnaire, respondents were asked to submit feedback on every scale in the questionnaire. The feedback regarding specific issues that need alteration includes:

- Crossing country' boundaries might not be a qualifier for a wicked problems. Wicked problems can occur within a nations' borders.
- Wicked problems can have multiple goals. A program is therefore often a more suitable form than a project.
- Wicked problems are often not so much a problem but opportunities to improve or the achieve something positive.
- Not just the number of stakeholders matter, an important aspect is a possible dominance of one of the stakeholder.
- IPMA competences can be interpreted differently by different people.
- The definition of context should be broadened.
- Consequences of failure are too strongly worded.

Additional remarks concerned specific items. Following up on these is to be determined in alignment with the outcomes of the Cronbach Alpha's and factor analysis. Referring to the overall theme of the questionnaire, several respondents provided feedback on the wording of wicked problem as a problem. Their remarks showed that a project or program is not always born from the need to solve a problem but from the desire to improve a situation that is not experienced as negative or unwanted. The research team decided to apply the change in wording to its research to include wicked issues with a positive nature.

C. Usage of the Wicked Explorer in practice

The Wicked Explorer is developed to be used as an instrument by multi-stakeholders addressing a complex or wicked challenge to assess and discuss the level and nature of wickedness of the challenge. Stakeholders are invited to fill out the Wicked Explorer' questionnaire and then compare their outcomes. The outcomes can be presented graphically using a spider web presentation as pictured to highlight differences (figure 2). The discussion on differences is to be guided towards finding out what has led to the higher or lower score compared to those of the other participants and to collectively explore (an agreed) the nature of the challenge. Once the level and nature of wickedness is determined and discussed, the stakeholders involved will proceed with a strategy to address the wicked challenge. Leadership is considered imperative in dealing with a wicked question to initiate and facilitate cooperation between the parties involved. Due to the nature of wicked challenges an approach will involve, by definition, numerous parties all holding their own interests and believes [4; 8]. Leadership is needed to have parties commit to a wicked challenge without the assertion that their interests will be met in the solution or solutions that are to be implemented as these cannot on forehand be determined nor are they likely not completely solve the wicked question [5-8]. Parties developing some level of trust in each other in order to be willing to commence on the journey of dealing with the wicked question and bridging gaps in believes and interests,

is therefore a vital building block for cooperation [3]. An interesting question is how this leadership should look like when dealing with wicked challenges. The next paragraph discusses the changing concept of leadership, leadership styles and leadership competences in relation to wicked challenges.

Figure 2: example of questionnaire outcomes from two participants
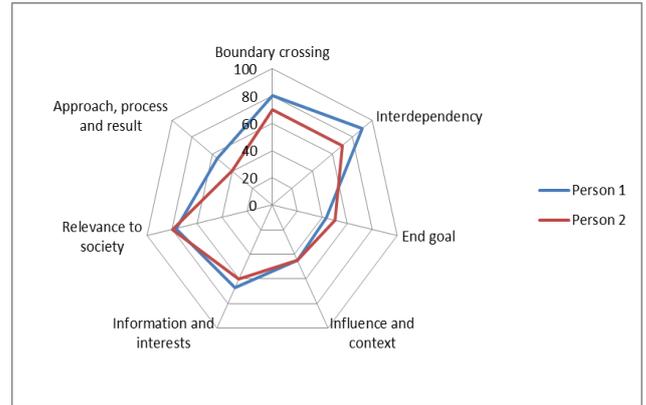
III. CHANGING CONCEPT OF LEADERSHIP

A. Leadership styles

Burns [12] was the first to describe transactional and transformational leadership. These antithetical leaderships styles started to receive attention from scholars worldwide after a publication by Hersey and Blanchard [13]. The transformational style seems to be best equipped for wicked challenges as personal relationships between parties involved are stressed and teamwork as well as continuous learning is encouraged. Transactional leadership is represented by stressing efficiency, planning, structure and requires clearly set goals. With a wicked challenge being unsolvable by nature [4], goals cannot be set and planning is impossible as implementing solutions might materialize new issues.

Dynamic leadership, as defined by Beinecke [14] gives credit to the agile nature of dealing with a wicked challenge. Processes need to be managed requiring adaptability, flexibility and experimentation while preserving a certain speed. Beinecke [14] considers dynamic leadership in valuing participants' opinions and contributions and hold regard for the capabilities. By cooperating, the group of participations can achieve more than when operating individually. Kanij and Mousara in [14]) are cited for emphasizing shared values between participants, the necessity for empowerment, sharing information and communication in order to deal with a network characterised by a diversity of interests. This notion of leadership shares similarities with the concept of servant leadership [15; 16]. It entails the guiding of parties without making an appeal on hierarchy or status. Servant leaders feel the desire to serve and have made a conscious choice to turn that desire in to leading others. It shows that the desire to serve is more an innate inclination and not a calculated strategy to obtain influence. The Servant Leadership Behavioral Scale (SLBS) as developed by Sendjaya, Sarros and Santora [17] shows six main factors that characterise the servant leader behavior:

1. **Covenantal Relationship**: accepting of others in order to help them grow and be creative without fear.
2. **Transforming Influence**: people interacting with servant leaders are affected in many ways, like emotionally,

intellectually, socially, and spiritually and are likely to become servant leaders themselves.

3. **Authentic Self**: authentic leading based on humility, integrity, security and vulnerability.
4. **Responsible Morality**: servant leaders make sure that the means used are morally and ethically justified.
5. **Voluntary Subordination**: being prepared to serve others whenever there is a legitimate need.
6. **Transcendental Spirituality**: as morality and needs of others are at is core, servant leadership holds a strong connection to spiritual values.

According to field studies by Licht [3] a network manager displaying servant leadership initiates and facilitates cooperation between parties involved in order to work towards defining and executing a joint agreement. The agreement as mentioned by Licht [3] is an agreement based on shared believes regarding the question at hand in order to reverse an unwanted situation or further advance an situation that is in need of improvement. The jointly drafted agreement can be considered as guiding principles by which the network will operate. Due to the agile nature of wicked questions the agreement might need alteration in due time as new information surfaces or solutions implemented affect parties interests or believes. According to Licht [3], leadership is required to guide changes of the network possibly leading to a revision of the agreement or a change in the involvement of parties. By displaying servant leadership, the network manager does not favour one of the parties' interests but serves all parties interests by focusing on the joint agreement. Opposite to Greenleaf's concept of servant leadership, the network manager holds not so much an individual focus by serving individuals to grow and learn, but facilitates all participating organisations of the network.

The previously mentioned transformational leadership holds similarities with servant leadership. Some major distinctions can be observed as well: servant leadership seems to stem from a natural desire to serve those that have a weak position compared to others [17]. Also, transformational leaders, like the network manager of Licht [3], are more likely to consider the organisation' interests as a priority above those of individuals whereas servant leaders follow a reverse priority (Barbuto and Wheeler in [16].

Considering wicked questions are to be dealt with by a network of parties, shared leadership is of particular interest. According to Pearce and Sims [18] leadership is not restricted to a certain person within the network but leadership behavior is displayed by several network members. The consequence is that influencing takes place through interactions of members with the aim of collectively achieving a goal or goals [19]. Combining shared leadership with traditional, vertical leadership is possible and might even be required [20; 21]. For networks working on wicked challenges this might mean that within the network, composed of representatives of organisations involved, shared leadership is displayed. Whereas within the separate organisations the more traditional, vertical leadership is still practiced.

B. Leadership competences

Leadership shows itself through behaviors displayed by the leader. These behaviors stem from competences the leader holds. A competence involves knowledge, skills and attitude and is the prerequisite for related behavior. This definition is based on Mackay (1997, in [14, p.15]: "Individual characteristics which must be demonstrated to provide evidence of superior or effective performance in a job.[..] The complete competence set or model for an individual role identifies all the knowledge, skills, experiences and attributes a person should display in their behavior when they are doing the job well."

Beinecke [14] as mentioned previously refers to Williams (2007) and Williams (2008) for a basic set of competences that fit dynamic leadership, combined with transformational and transactional leadership. These competences include:

- Interpersonal skills

- Appreciation and acceptance of strategic interdependencies and systems

- Being able to act as 'translator' to understand the variety in meanings and aspirations of the separate institutions [stakeholders or parties involved],

- Being able to create a learning environment that fosters reflection, sense of understanding and thinking,

- Commitment to types of leadership that deal with sharing leadership through empowerment strategies and decision making.

Licht [3] determined, through his observations of network practices relating to challenges that can be considered wicked, that the development of trust between parties to cooperation is fundamental. Trust is established when the five requirements for effective cooperation are met. These requirements are (1) equality, (2) respect, (3) freedom, (4) responsibility and (5) transparency. The network manager should promote interaction between parties to foster development of the requirements mentioned. Therefore, being highly competent in communication seems to be relevant for the network manager. In dealing with the agile nature of a wicked challenge a network manager might be required to offer a certain degree of structure to the cooperating parties. Structure could take the form of some agreed principles regarding governance and a suggested time line, both are of course open to change when needed.

Competences of Greenleaf's servant leader are described by Sullivan and Williams [in 14, page 5]: "It [servant leadership] is non-hierarchical and inter-organizational, collaborative with concerted action, convenes stakeholders and facilitates agreements for collective action, is facilitative and asks the right questions, and, while having a stake in getting agreement upon outcomes, encourages divergent ways to reach them". Related competences involve communication, coaching and cooperation, but above all the willingness to share.

In conclusion, transformational, dynamic and to an extend also servant leadership seem to be best equipped for wicked challenges. Also, the notion that leadership belongs to several members of a network [18] and the notion that influencing takes place by interactions of members with the aim of collectively reach a goal [19], are relevant for wicked challenges. Competences that seem central for these types of leadership and for addressing wicked challenges are the so called "soft skills, like communication, interpersonal skills, coaching, willingness to share, and being able to act as a translator of a variety of meanings and aspirations of stakeholders involved.

In order to prepare the next generation of leaders for the wicked challenges ahead, the question is, which learning environment should we create to stimulate and develop above mentioned leadership competences?

IV. THE VALUE CREATORS: A NEW EDUCATIONAL CONCEPT

Wicked challenges require other ways of thinking and addressing compared to more "tame or complicated" challenges, which can be defined in terms of cause and effect (linear) and for

which there are definite solutions available. Wicked challenges require the participation of different stakeholders, a holistic approach, different forms of value creation based on collaborative networking. To prepare young people, students, for their future role as project and change managers addressing wicked challenges, Windesheim Honours College (WHC) in the Netherlands, developed an innovative educational concept which is called The Value Creators. WHC offers a BBA in Global Project and Change Management, an international, English taught bachelor program, based on IPMA competences. In the Value Creators semester, third and fourth year students work on a wicked challenge, by using the 4E-model, developed by WHC.

Global Goals

In the Value Creators semester, we start with the framework of Global Goals for Sustainable Development covering four fields: Urban Dynamics, Global Health, Social Entrepeneurship and Civil Society. These global goals are in essence wicked challenges; challenges or problems that have no definitive formulation, they can be improved, not "solved", there is no template to follow when tackling wicked challenges, there is always more than one explanation for a wicked problem, depending greatly on individual perspectives and every wicked problem is a symptom of another problem, which makes the interconnectedness of the challenges of huge importance. The complexity of this new network society requires from education new educational learning environments to train our students to thrive in complex environments by connecting with relevant networks. As Theory U [2] suggests, education needs to be accessible to everyone, empowering (putting the learner into the driver's seat of profound personal, professional, and societal renewal), and transformational (providing new learning environments that activate the deepest human capacities to create — both individually and collectively).

Value Creator journey

Students work a whole semester in a journey that departs from a wicked question in one of the Value Creation fields: Urban Dynamics, Global Health, Social Entrepeneurship and Civil Society. From there, and using the E-model, they explore all the ramifications of the wicked problem they are addressing and involve different networks. They will define tasks, actions and finally value. Students are in control of this journey during the whole process. Lectures take a step back and become coaches, co-learners, co-creators and part of the collaboration process where value is created. Students also take on this variety of different roles, so they are learners and creators, coaches and experts as well. The Value Creators semester provides students with an innovative learning environment where they can develop essential 21st century skills like social responsibility, collaboration and leadership, creativity and innovation, critical thinking and problem solving, as well as the above mentioned essential soft skills of leadership.

The E-model

the Value Creators programme, the E-Model plays an important role in helping the students follow the process. It is a flexible tool to help students, organisations, businesses, governments and other important stakeholders to navigate through wicked challenges by focusing on the process of creating value. The flexibility of the E-Model allows users to apply the model to press-cooker sessions of an hour or several hours, or extend the model through several months. In the Value Creators, the different phases of the model are followed in a period of six months. The role of the students in this process is to initiate this process, come up with a wicked question they want to address and take action on and invite a relevant network of professionals from inside and outside the university (e.g. business, NGO's, researcher, professors, governmental organisations)

to go through the process together and as such co-learn and co-create value on a wicked challenge.

The functionality of the E-Model is inspired by the Design Thinking Methodology, but adapted to focus in creating value at a societal change level. The four phases of our model reassemble some of the steps and phases of Design Thinking model but simplifies the process by asking specific actions from the users of the model. Action and processes are key in the use of the E-Model. The four phases are: (1) Explore; (2) Engage; (3) Elaborate and (4) Evaluate. The E-model uses a canvas, with for each phase a symbolic picture (see figure 3).

Figure 3: The E-model Canvas
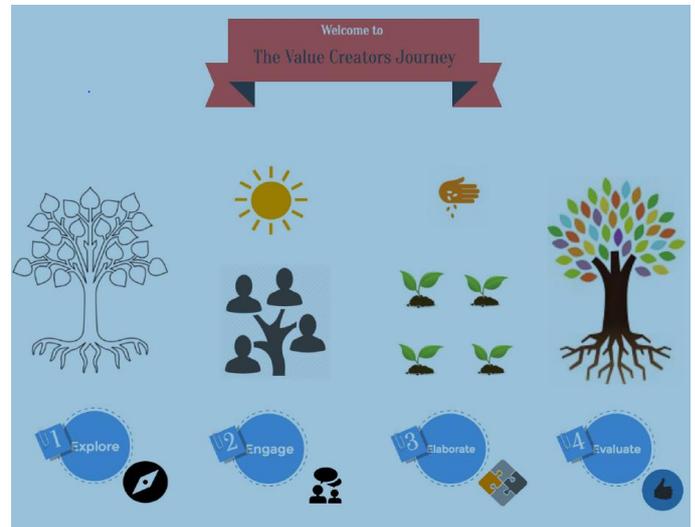
Explore phase

The process of Value Creation starts with exploring: which wicked challenge or global goal do we want to address and why? What are possible causes and consequences of this challenge, what is the big dream and what are possible solutions? Each participant of the Value Creation session writes answers to these questions on pink sticky notes and put the causes at the root of the tree and the consequences at the top of the tree. Then each participant is asked to think of possible solutions. After collecting all possible solutions, the group chooses one solution, which will be the starting point for phase 2 of the model, the phase of Engaging.

Example Explore phase for Global Goal "end hunger in the world": One of the causes of Hunger is poor agricultural methods, consequences is low agricultural production. A way to create value is to focus on how to improve agricultural education and training for farmers.

Engage phase

The second phase of the model, ENGAGE, the solution that was chosen in phase 1 is discussed in more detail and invites the participants to identify who needs to be involved in the process, who owns the knowledge, expertise and capacity to make a change and make things happen. In other words: which stakeholders are involved

in this solution. Each participant writes the stakeholders they find important to involve on a sticky note.

Example for Global Goal "end hunger in the world": Focus= improve agricultural education for young people and training for farmers. Identify networks and Stakeholders: Ministry of Education, teachers, farmer union, farmers, young people/students.

Elaborate phase

During the phase ELABORATE, participants need to define actions for all the stakeholders involved in the previous phase. The question in step 3 is to get from the DREAM to ACTION. What needs to be done by whom? Which actions should or could be taken by which stakeholder? Participants are asked to write all these actions down per stakeholder on a green sticky note.

Example for Global Goal "end hunger in the world": Focus= improve agricultural education for young people and training for farmers. Example: the Ministry of Education needs to financially support agricultural education; farmers need to organise themselves and organise training.

Evaluation phase

During the last phase of the model, the EVALUATION, users define the value to be created and for whom when these actions have been executed. The values that are being defined are input for evaluation later on in the process when activities actually have taken place.

Example for Global Goal "end hunger in the world": Focus= improve agricultural education for young people and training for farmers. Example: self-respect for farmers; Independence and source of living for young people; enough food for all.

C. Conclusion

For the approach of a wicked challenge cooperation is needed between all relevant parties with equality as the underlying principle. Leadership must focus on intensifying and guiding interaction, sharing believes and values and allowing change. Guiding and offering some sort of structure to the parties involved is preferred although predetermined solutions or goals should not be strived for. A combination of leadership styles might be most effective including dynamic, transformational, transactional servant and shared leadership. Competences are a way to qualify the behavior needed of the leader(s) within the network of parties. The Value Creation journey and the E model developed by Windesheim Honours College provide students to start a process of value creation, connecting with relevant stakeholders and networks to make change happen.

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