THEORETICAL STUDY OF SOFTSKILLS-METASKILLS ACCELERATION IN VOCATIONAL CURRICULUM IN FACING INDUSTRIAL REVOLUTION 4.0

Theoretical Implementation of SoftSkills-MetaSkills Industry 4.0 In the Curriculum for Secondary Education in Competence of Chemical Analysis

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ABSTRACT

Based on the review of the Central Statistics Agency in 2017, the unemployment rate in Indonesia has increased by 10,000 people to 7.04 million people, where the highest number of unemployed people comes from Vocational Education, which reaches 14.61%. The high number of unemployed is due to the graduates produced not having competency qualifications that are in line with industry expectations.

With the missing link and match between vocational curricula with industrial competency (both in terms of cognitive competence, psychomotor and professional work attitudes and work emotional personality) research is needed on soft skills and skills in improving vocational graduate competencies in the industrial revolution era 4.0

Studies on soft skills are focused on improving the competence of work professional attitudes and the emotional personality of work in the face of the industrial revolution 4.0

The following are 10 soft skills-skills competencies that can support students facing the industrial revolution 4.0, among others: (1) Literacy Ability (covering visual / digital literacy, media, information and technology literacy); (2) Communication and Collaboration; (3) Critical Thinking and Problem Solving; (4) Creativity and Innovation; (5) Leadership and responsibility; (6) Work Productivity and Accountability; (7) Social skills; (8) Confidence; (9) Ability to adapt; (10) Personality and Emotional Intelligence.

The implementation of strengthening soft skills in learning can be done by applying the SCL learning method (Student Centered Learning).

Keyword:
Soft Skill, Meta Skill, Industrial Revolution 4.0, SCL (Student Centered Learning)

1. INTRODUCTION

4.0 Industrial Revolution

German Chancellor Angela Merkel (2014) argues that Industry 4.0 is a comprehensive transformation of all aspects of production in the industry through the incorporation of digital and internet technology with conventional industry.\[1\] A more technical understanding is delivered by Kagermann et al (2013) which explains that Industry 4.0 is an integration of Cyber Physical System (CPS) and Internet of Things and Services (IoT and IoS) into industrial processes.

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[1] Hoedi Prasetyo 1, Wahyudi Sutopo 2. Industri 4.0: Telaah Klasifikasi Aspek Dan Arah Perkembangan Riset
The industrial process in question includes manufacturing, logistics and other processes. CPS is a technology to combine the real world with the internet world. This merger can be realized through the integration between physical processes and computing close loop (Lee, 2008). Hermann et al (2015) added that Industry 4.0 is an integration between a set of technologies (CPS, IoT and IoS) with smart factory. Smart factory is an industry that monitors the production process with CPS technology. There are six industrial design principles 4.0, namely interoperability, virtualization, decentralization, capabilities real time, service oriented and are modular.[1]

With such rapid technological advances, vocational education is faced with the problem of the quality of graduates who are not yet competent. During the industrial 3.0 period alone, vocational education was faced with the problem of the large number of unemployed people. Based on data from the Central Statistics Agency (BPS) in 2017, the number of unemployed people in Indonesia increased by ± 10,000 people to 7.04 million people [2].

Suhariyanto revealed that from 7.04 million unemployed people, the highest number of unemployed came from vocational graduates (SMK), which reached 14.61%, followed by undergraduate graduates as much as 12.47% then high school graduates as much as 10.23%. For the smallest number of unemployed comes from elementary school (SD) graduates of 6.74% [3]

Data on Number of Unemployment in 2017 by Type of Education

<table>
<thead>
<tr>
<th>No.</th>
<th>Type of Education</th>
<th>Number of Unemployed (people)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Elementary School</td>
<td>474,522</td>
<td>6.74</td>
</tr>
<tr>
<td>2.</td>
<td>Junior High School</td>
<td>643,492</td>
<td>9.14</td>
</tr>
<tr>
<td>3.</td>
<td>Senior High School</td>
<td>720,232</td>
<td>10.23</td>
</tr>
<tr>
<td>4.</td>
<td>Vocational School</td>
<td>1,028,600</td>
<td>14.61</td>
</tr>
<tr>
<td>5.</td>
<td>DI</td>
<td>550,558</td>
<td>7.82</td>
</tr>
<tr>
<td>6.</td>
<td>D.II</td>
<td>611,106</td>
<td>8.68</td>
</tr>
<tr>
<td>7.</td>
<td>D.III</td>
<td>672,357</td>
<td>9.55</td>
</tr>
<tr>
<td>8.</td>
<td>D.IV</td>
<td>830,062</td>
<td>11.79</td>
</tr>
<tr>
<td>9.</td>
<td>SI</td>
<td>877,936</td>
<td>12.47</td>
</tr>
<tr>
<td>10.</td>
<td>Etc</td>
<td>631,523</td>
<td>8.97</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7,040,386</td>
<td></td>
</tr>
</tbody>
</table>

The high number of unemployed vocational graduates (SMK) caused by several factors, including: (1). Lack of available employment; (2) competition between the globalization era and the Asean Free Market (MEA); (3) the graduates produced do not have competencies that are in accordance with the competencies needed in the industry.

[1] Hoedi Prasetyo¹, Wahyudi Sutopo². Industri 4.0: Telaah Klasifikasi Aspek Dan Arah Perkembangan Riset
This is due to the *missing link and match* between the education curriculum vocational (SMK) and the competency requirements in the industry. *Missing links and match* competencies that occur include affective aspects (attitudes), cognitive (knowledge) and psychomotor (skills). Problems (1) and (2) are influenced by government policies, while problems (3) are related to the curriculum system. The curriculum vocational (SMK) must always synchronize with the industry so that it can reduce the occurrence of *missing link and match* between graduate competencies produced with the competencies needed by industry 4.0.

In the journal "Theoretical Study of the Acceleration of Softskills-Metaskills in the Vocational Curriculum in Facing the Industrial Revolution 4.0 - Theoretical Implementation of SoftSkills-MetaSkills Industry 4.0 In the Secondary Vocational Education Competence Competency in Chemical Analysis Skills" will be discussed about mapping soft skills that must be prepared in the face of the revolutionary era 4.0

2. DEFINITIONS SOFT SKILLS AND METASKILLS

**Softskills**

Soft skills are categorized as one's skills related to the field of science. Softskills are influenced by psychological talent. Softskills are also defined as an ability, talent or skill that is in every human being[^4].

According to Elfindri et al (2011: 67), Soft skills are life skills, either for themselves, in groups, or in a community. By having soft skills, a person can have communication, emotional, language, socializing, ethical and moral skills, manners and spiritual skills.

Softskills are one's skills in dealing with others and themselves. Softskills include humanistic beliefs, motivation, behavior, habits, character and attitude. These softskills attributes are owned by everyone with different levels, influenced by the habit of thinking, saying, behaving and behaving. These soft skill attributes can change if the person concerned wants to change them by learning and practicing getting used to new things[^5].

According to Illah Sailah (2008: 18), based on the type of skills, soft skills can be divided into 2, namely: (1). Intra-personal skills and (2). Inter personal skills[^6].

Intra-personal soft skills are defined as abilities that are utilized for self-interest, including self-awareness (self-confidence, self-assessment, nature and preferences and emotional awareness) and self-skills (self-improvement, self-control[^7]). According to Rahayu and Nuryata (2011). Intrapersonal softskills include: (a) transforming character (ability to manifest character or character); (b) transforming beliefs; (c) change management; (d) stress management; (e) time management; (f) creative thinking processes; (g) goal setting and life purpose; (h) accelerated learning[^8].

[^6]: Rika Rachmawati¹, Dyah Kasumasutri², Neneng Susanti³. Pembelajaran Soft Skill Berbasis Pada Hasil Pemetaan Personality Lulusan Universitas Widyatama Dengan Pendekatan Metode Disc (Dominance, Influence, Steadiness Dan Compliance). Universitas Widyatama, Bandung. rika.rachmawati@widyatama.ac.id, dyah.kasumasutri@widyatama.ac.id, neneng.susanti@widyatama.ac.id
[^7]: Ahmad ardianto. Paper on soft skill definition
[^8]: Satya Wacana Christian University. soft skills in learning. Page 11-13
While inter-personal soft skills is an ability that is used for oneself and others, include social consciousness (political awareness, leveraging diversity, service oriented) and social skills (leadership, ability to influence, communication, cooperation, collaboration and synergy in team)[8].

According to Rahayu and Nuryata (2011) Interpersonal includes: (a) communication skills; (b) relationship building; (c) motivation skills; (d) leadership skills; (e) self-marketing skills; (f) negotiation skills; (g) presentation skills; (h) public speaking skills [9].

**METASKILLS**

*Metaskill* is practical knowledge that can be used for a variety of situations including those that have never been experienced before. Two important things that *Metaskills* must have in facing future competition include: (1). The ability to think of new solutions; (2). Persuasion skills [10]

*Meta Skill* is a general skill that can be applied widely to a variety of problems and can be used to obtain other more specific skills, for example,

- The ability to learn languages generally helps to learn French, Russian or other languages
- The ability to create learning media from certain fields of knowledge, then the media is used to study other fields of knowledge
- The ability to improvise can be used to communicate in any situation where we don't have time to prepare [11]

*MetaSkills* are skills needed to utilize skills in other fields. *Metaskills* is a skill that allows one to improve other skills.[12]

### 3. WHY SOFTSKILLS AND METASKILLS ARE NEEDED

**Character-Based Curriculum Design**

Based on Bloom’s trichotomy, implementasi curriculum must touch all dimensions of education, namely cognitive, affective, and psychomotor aspects. Therefore, the learning process is not only on the transfer of knowledge, but must be until the formation of affective and psychomotor characters. Based on the concept of Unesco, character formation is not only focused on learning to Know and learning to do, but must arrive at learning to be and learning to life together. [13]

Picture of Character-Based Curriculum Design

Source: www.themegallery.com/ Center for Balitbang Curriculum Ministry of National Education [13]

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[10] www.urbandictionary
[13] Agus Salim Mansyur. Character-Based Curriculum Development: Conception and Implications. The Faculty of Islamic Education and Teacher Training of the University of Garut
The results of interviews about the secrets of success carried out by Thomas J. Neff and James M. Citrin (Neff & Citrin, 1999; 2001; Esler, 2012) for 50 most successful people in America found 10 success tips, namely: (1). Passion; (2). Intelligence and clarity of thinking; (3). Great communication skills; (4). High energy level (energetic); (5). Egos in check (controlled ego); (6). Inner peace; (7). Capitalizing early life experience; (8). Strong family lifes; (9). Positive attitude; (10). focus on right actions. Of the 10 secrets of success, none of them mentioned the importance of hardskills as a requirement for success in the community of work. 50 people agreed that the most critical is not hardskills but soft skills or skills to relate to others (called: peopleskills) (Asmuni, 2014, Asmuni & Hashim, 2014) [14].

Survey of polls conducted by NACE (National Association of Colleges and Employers) of 457 entrepreneurs in America The union proves that in the face of job competition, the most necessary competencies are soft skills. [15] The data in the table shows that the academic achievement index only ranks 17 out of 20 qualities considered important by a graduate.

<table>
<thead>
<tr>
<th>No.</th>
<th>Quality Competence</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Communication ability</td>
<td>4.69</td>
</tr>
<tr>
<td>2.</td>
<td>Honesty / integrity</td>
<td>4.59</td>
</tr>
<tr>
<td>3.</td>
<td>Ability to work together</td>
<td>4.54</td>
</tr>
<tr>
<td>4.</td>
<td>Interpersonal skills</td>
<td>4.50</td>
</tr>
<tr>
<td>5.</td>
<td>Good work ethic</td>
<td>4.46</td>
</tr>
<tr>
<td>6.</td>
<td>Have motivation / initiative</td>
<td>4.42</td>
</tr>
<tr>
<td>7.</td>
<td>Able to adapt</td>
<td>4.41</td>
</tr>
<tr>
<td>8.</td>
<td>Analytical skills</td>
<td>4.36</td>
</tr>
<tr>
<td>9.</td>
<td>Computer capabilities</td>
<td>4.21</td>
</tr>
<tr>
<td>10.</td>
<td>Organizational capabilities</td>
<td>4.05</td>
</tr>
<tr>
<td>11.</td>
<td>Oriented in detail</td>
<td>4.00</td>
</tr>
<tr>
<td>12.</td>
<td>Ability to lead</td>
<td>3.97</td>
</tr>
<tr>
<td>13.</td>
<td>Confidence</td>
<td>3.95</td>
</tr>
<tr>
<td>14.</td>
<td>Friendly personality</td>
<td>3.85</td>
</tr>
<tr>
<td>15.</td>
<td>Polite and ethical</td>
<td>3.82</td>
</tr>
<tr>
<td>16.</td>
<td>Wise</td>
<td>3.75</td>
</tr>
<tr>
<td>17.</td>
<td>IP ≥ 3.00</td>
<td>3.68</td>
</tr>
<tr>
<td>18.</td>
<td>Creative</td>
<td>3.59</td>
</tr>
<tr>
<td>19.</td>
<td>Humorous</td>
<td>3.25</td>
</tr>
<tr>
<td>20.</td>
<td>Entrepreneurial ability</td>
<td>3.23</td>
</tr>
</tbody>
</table>

According to a survey conducted on industrial user graduates, there were 19 competencies considered important in job competition. Table data shows that competencies that are indispensable in dealing with job competition are soft skills competency.

Table of 19 competencies required through industry surveys

<table>
<thead>
<tr>
<th>SKILL</th>
<th>VALUE</th>
<th>SKILLS CLASSIFICATION</th>
<th>URGENCY RANKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>4.69</td>
<td>Softskill</td>
<td>1</td>
</tr>
<tr>
<td>Honesty / integrity</td>
<td>4.59</td>
<td>Softskill</td>
<td>2</td>
</tr>
<tr>
<td>Collaboration</td>
<td>4.54</td>
<td>Softskill</td>
<td>3</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>4.50</td>
<td>Softskill</td>
<td>4</td>
</tr>
<tr>
<td>Good work ethic</td>
<td>4.46</td>
<td>Soft</td>
<td>5</td>
</tr>
<tr>
<td>Motivation / Initiative</td>
<td>4.42</td>
<td>Softskill</td>
<td>6</td>
</tr>
<tr>
<td>Able to adapt</td>
<td>4.41</td>
<td>Softskill</td>
<td>7</td>
</tr>
<tr>
<td>Analytical</td>
<td>4.36</td>
<td>skillCognitive hard skills</td>
<td>8</td>
</tr>
<tr>
<td>Computers</td>
<td>4.21</td>
<td>Psychomotor hard skill</td>
<td>9</td>
</tr>
<tr>
<td>Organization</td>
<td>4.05</td>
<td>Softskill</td>
<td>10</td>
</tr>
<tr>
<td>Detailed orientation</td>
<td>4.00</td>
<td>Softskill</td>
<td>11</td>
</tr>
<tr>
<td>Leadership</td>
<td>3.97</td>
<td>Soft</td>
<td>12</td>
</tr>
<tr>
<td>Confidence</td>
<td>3.95</td>
<td>Softskill</td>
<td>13</td>
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<tr>
<td>Polite / ethical</td>
<td>3.82</td>
<td>Softskill</td>
<td>14</td>
</tr>
<tr>
<td>Wise</td>
<td>3.75</td>
<td>SoftskillPerformance</td>
<td>15</td>
</tr>
<tr>
<td>index &gt; 3</td>
<td>3.68</td>
<td>Cognitive hard skills</td>
<td>16</td>
</tr>
<tr>
<td>Creative</td>
<td>3.59</td>
<td>Softskill</td>
<td>17</td>
</tr>
<tr>
<td>Humorous</td>
<td>3.25</td>
<td>Softskill</td>
<td>18</td>
</tr>
<tr>
<td>Entrepreneurship Ability</td>
<td>3.23</td>
<td>Softskill</td>
<td>19</td>
</tr>
</tbody>
</table>

Source: Elfrindi Soft Skill for Educators [16]

4. **RESEARCH METHODS**

This theoretical study was conducted using the method *Research and Development (R & D)*, as illustrated in the following figure:

[16] Rika Rachmawati, Dyah Kusumastuti, Neneng Susanti, Pembelajaran Soft Skill Berbasis Pada Hasil Pemetaan Personality Lulusan Universitas Widyatama Dengan Pendekatan Metode Disc (Dominance, Influence, Steadiness Dan Compliance), Universitas Widyatama, Bandung, rika.rachmawati@widyatama.ac.id, dyah.kusumastuti@widyatama.ac.id, neneng.susanti@widyatama.ac.id
5. **SOFTSKILLS SCOPE AND METASKILLS**

The concept of future competencies does not only prioritize knowledge and skills, but unity between *hardskills* (including: cognitive, affective and softskills (including: personal and interpersonal attitudes)). With hardskill competency, vocational students are expected to become professional experts in the field of expertise. Whereas by having softskills competencies, students are expected to have strong personal and interpersonal personalities in their work environment.

In industry 4.0, students will be faced with the development of developing science and technology. For this reason, they will need various competencies, including cognitive and meta-cognitive (eg critical thinking, creative thinking, learning to learn); social and emotional skills (eg empathy, confidence and collaboration); and information technology skills (for example using information and communication technology devices). However, these competencies will develop more broadly when followed by the growth of softskills competencies in students.[17]

Following are softskills competencies that are predicted to support vocational students to become experts who are highly competitive in the industrial revolution era 4.0:

1. **Literacy**
   - Literacy is the ability to discover science and technology from various learning sources. The following are literacy skills needed in industry 4.0:
     a. **Visual / Digital Literacy**
        Students need digital and visualization skills to be able to decipher, interpret, detect patterns, and communicate using computational media. Burmark believes that with access to digital material and internet sites, education and training can reach more information (Burmark, 2002).[18]
        
        Digital Literacy is the ability of individuals to use digital technology and communication tools to access, manage, integrate, analyze, and evaluate information in building new knowledge or to communicate and socialize in the community.[19]
     b. **literacy Media Literacy Media**
        literature is the ability to access, understand, and analyze news messages. These skills include the ability to understand the content conveyed by news, understand issues caused by news and criticize inclusion of factual information in news reports.[20]
     c. **Information literacy**
        Information literacy ability to understand the content of the information subsequently developed independently.[21]

Information literacy is also defined as the ability to recognize when information is needed, the ability to locate, evaluate, and use effectively the needed information "(LearnHigher, 2006). Information literacy skills include: accessing information efficiently, evaluating information critically, and using information accurately and creatively. This literacy forms the basis for lifelong learning (Andretta, 2005). [22]

E-learning (Lamb & Callison, 2005) is accessing information through internet interaction. [23]

d. **Technology Literacy**

According to *Maryland Technology Education State Curriculum*, technology literacy is the ability to use, understand, regulate and assess an innovation involving science and technology to solve problems and expand one's competence. [24]

Technology literacy is the effective use of technology to increase knowledge, ability and critical thinking, as well as making decisions. [25]

Technology literacy can be interpreted as the ability to use technology and innovation effectively in improving science, critical thinking skills, and making decisions. [26]

2. **Communication and collaboration**

Communication and collaboration refers to the ability of individuals to communicate clearly using spoken, written, and non language-verbal, and collaborate effectively and responsibly with a variety of social communities. [27]

Trilling & Fadel (2009) argues that communication skills can be analogous:

- Articulating thoughts and ideas effectively using oral, written and non-verbal communication skills in various contexts.
- Effectively to understand the content delivered
- Using oral, written and non-verbal communication to inform, instruct, motivate and influence others

Collaborate is Communicate effectively in diverse social environments and communities (including multi-languages) [28]

3. **Critical thinking and Problem Solving**

Critical thinking and problem solving skills include the ability of individuals to a) reveal the reason for the occurrence of problems effectively; b) asking questions that point to the core of the problem; c) analyze and evaluate problems and alternative solutions; d) reflect critically on the decisions taken. Trilling & Fadel (2009) defines critical thinking as the ability to analyze, interpret, evaluate, and synthesize problems. [29]
4. **Creativity and Innovation**

   Creativity and innovation is the ability to generate ideas or unique solutions that are useful and have extensive knowledge.\[30\]

   Creativity is the ability to create something new in solving problems. Creativity and innovation are the ability to analyze new relationships between pre-existing elements. Another opinion about creativity is all one's abilities to create something new, both in the form of ideas and real works that are relatively different from what has been before.\[31\]

   **Creativity** is a mental process to bring up new ideas or concepts, or new relationships between ideas and concepts that already exist. From a scientific perspective, the results of creativity must have originality (not imitation) and truth value.\[32\]

5. **Leadership and responsibility**

   Leadership and responsibility are the ability of individuals to work with the interests of the larger community, to inspire others, and to unite the strengths of others to achieve common goals.\[33\]

   **Leadership** is the process of influencing or exemplifying others in an effort to achieve organizational goals.\[34\]\[35\]

   Leadership includes:
   
   a) Regulating
   b) Empowering
   c) Assessing and evaluating
   d) Motivating Others \[36\]

6. **Work Productivity and Accountability**

   Productivity and Accountability Skills is the ability to set and fulfill goals, prioritize needs, manage time, work effectively, and collaborate and work with others to meet goals. 21st Century skills state that students must be able to (1) manage the project; (2) regulate and fulfill objectives; (3) prioritizing, planning, and managing work; (4) Produce real work; (5) work positively and ethically; (6) responsible for the work; and (7) collaborating and collaborating effectively with the team.\[37\]

   **Hard work, diligent and conscientious**

   **Hard work** is the maximum effort to meet goals; **Diligent** means sincerity of determination in doing (achieving) something. While **tenacious** means not despair with a strong will in trying to achieve goals and ideals.

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\[32\] dikutip dari Wikipedia.com

\[33\] Kamehameha Schools Research & Evaluation Division. 2010. 21st Century Skills for Students and Teachers By Pacific Policy Research Center. Page 8


**Thorough** means careful and careful. [38];

**Performance High level** is the ability to build and maintain high tempo and speed [39]

7. **Social skills**
   Social skills refer to the ability to work with colleagues, present themselves professionally, interact effectively with others and respect social and cultural differences (Partnership for 21st Century Skills, 2009). NCREL (2003) [40]
   Social skills include social analysis skills, including:
   a. Ability the Mental
      Ability to deal with various problems in detail, able to respond to pressure positively and think positively about the problems at hand.
   b. Creative thinking
      The ability to see and think outside the formulated solution.
   c. Quantitative Reasoning The
      ability to exchange opinions, analyze and draw conclusions from differences of opinion. [41]

8. **Trust Self**
   Confidence is a combination of confidence in ability and respect for yourself [42]
   Belief in ability is a feeling that we can carry out various tasks or achieve goals well Whereas self-respect is a sense of trust that we are competent in what we do, people who are confident usually like themselves, want to take risks to achieve goals, and always think positively about the future. [43] However, people who do not have the confidence to feel less able to achieve their goals, and tend to have a negative view of themselves and what he wants to achieve in life. [44]

9. **Adaptation**
   Adaptation is the way to overcome the pressure accepted. [44] Adaptation also means adjustment to the environment. Adaptation includes adjusting to applicable and correct environmental regulations [45]

10. **Emotional Personality**
    a. Honesty
    The ability to think, speak and behave according to real facts and truths.
    b. Assertiveness
    The ability to take over yourself without being affected by others. Assertiveness can be ignored if our position in thinking is incorrect.

[44] Dr Sam Chu. 2006. Developing upper primary students'21st century skills. Page 21
[45] Sri Muliati Abdullah, Staf Ahli Bagian SDM dan HR Service ECC UGM.
c. Competitiveness
Desire to achieve and exceed goals. Competitiveness is also defined as the ability to work independently and maintain motivation in work

d. Emotional Resilience
The ability to maintain work focus and effectiveness in stressful situations. Emotional Resilience is the ability to deal with emotional stresses and tensions that arise as a consequence of working in situations that are met with achievement targets and limited deadlines \[46\]

Emotional intelligence (English: emotional quotient, abbreviated EQ) is the ability of a person to receive, assess, manage, and control the emotions of himself and others around him. \[47\]

According to Howard Gardner (1983) there are five main points of one's emotional intelligence, namely being able to realize and manage emotions themselves, have sensitivity to the emotions of others, be able to respond and negotiate with others emotionally, and can use emotions as a tool to motivate themselves. \[48\]

6. **SOFTSKILLS-METASKILLS IN CURRICULUM IMPLEMENTATION**
Implementation of strengthening soft skills in an effort to produce professional and character graduates can be done in six ways, namely: (1) curriculum, (2) learning, (3) academic climate, (4) self-development activities, (5) leadership and management school, and (6) synergistic relationships with stakeholders and the business / industry world \[49\]

The basic questions that need to be answered in this regard are: (a) how to integrate the strengthening of soft skills through curriculum, (b) how to create strategies that support the strengthening of soft skills in learning (c) how to create an academic climate and culture in support of strengthening soft skills -metaskills in the education process, (d) how is the implementation of strengthening skills in terms of leadership and school management (e) how is the implementation of strengthening skills in self-development activities, and (e) how to integrate the dimensions of soft skills through synergic collaboration with stakeholders and business / industry. \[50\]

Micro character education strategy
Source: National education meeting

| Habits in the Environment |
| Habits in School |
| Habits in self-development activities |
| Habits in classroom learning activities |

\[47\] Mendefiniskan Kecerdasan Emosional. Diakses 4 Juni 2010
\[48\] Emosi Konsep. Kecerdasan Emosional. Diakses 4 Juni 2010
\[49\] Abdullah Aly, Pengembangan Pembelajaran Karakter Berbasis Soft Skills Di Perguruan Tinggi
\[50\] Wagiran, Model Penguatan Soft Skills Dalam Mewujudkan Calon Guru Kejuruan Profesional Berkarakter.
In the context of vocational education, the integration of soft skills and the character of professional work in the learning process have a strategic role in the effort to produce professional vocational graduates. [51]

The implementation of strengthening soft skills needs to be done in each competency (hardskills) given to students. Learning methods that are in accordance with the dimensions of strengthening soft skills include the SCL learning method (student centered learning). [52] Some SCL learning methods (student centered learning) that can be used include:

1. Model E-Learning can develop literacy skills (visual / digital, media information and technology) students [53]

2. Role-Play and Simulation can focus students on emotional personality, leadership and responsibility [54]

3. Self-Directed Learning and Value Clarification Technique (VCT) help students analyze the positive values of a problem. This learning method is effective to provide reinforcement of social skills. [55]

4. Cooperative and collaborative Learning can focus on strengthening student communication and collaboration

5. Project Based Learning and discovery learning can provide opportunities for students to think creatively and innovatively

6. Teaching Factory can optimize students in adaptation, accountability and work productivity skills [57]

7. Method of Problem Based Learning (PBL)

PBL learning methods focus on the ability of students to be able to improve the ability of Problem Solving Analysis (Borrow, Tamblyn. 1980)

8. Quantum Teaching

Quam Teaching learning methods can emphasize students' abilities in communication skills and confidence [58]

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[51] Wagiran Fakultas Teknik, Universitas Negeri Yogyakarta wagiran@uny.ac.id, Model Penguatan Soft Skills Dalam Mewujudkan Calon Guru Kejuruan Profesional Berkarakter

[52] Prof. Dr. Mansyurdin, Prof. Dr. Oktavianus, Prof. Dr. Afrizal, Prof. Dr. I. Made Arna Pedoman Perumusan Soft Skills Lulusan Dan Pengintegrasiannya Dalam Proses Pembelajaran, page 11


[56] Prof. Dr. Mansyurdin, Prof. Dr. Oktavianus, Prof. Dr. Afrizal, Prof. Dr. I. Made Arna, Pedoman Perumusan Soft Skills Lulusan Dan Pengintegrasiannya Dalam Proses Pembelajaran, page 18

[57] Prof. Dr. Sanggam R I Manalu, M.Pd, Dr. Sogi Hermanto, M.Pd, Jhonni Rentas Duling, MT, Gaulfi Siswandi, M.Pd, Supriyadi, M.Pd, Airways P Siahaan, ST. 2017. Tatakelola Pelaksanaan Teaching Factory. Direktorat Pembinaan Sekolah Menengah Kejuruan

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CONCLUSION

Softskills-Metaskills are interpersonal (in relation to others) and intrapersonal abilities (by maximizing abilities within oneself that support hardskills abilities). Collaboration between soft skills and skills is the most important thing in preparing vocational graduates to become highly competitive experts. In the industrial era 4.0, 10 soft skills skills that support students in facing the industrial revolution 4.0, among others: (1) Literacy Ability; (2) Communication and Collaboration; (3) Critical Thinking and Problem Solving; (4) Creativity and Innovation; (5) Leadership and responsibility; (6) Work Productivity and Accountability; (7) Social skills; (8) Confidence; (9) Adaptation; (10) Emotional Personality

Implementation of strengthening soft skills can be done in six ways, namely: (1) curriculum, (2) learning, (3) academic climate, (4) self-development activities, (5) school management leadership and management, and (6) synergistic relationships with stakeholders and the business / industry.

The implementation of strengthening soft skills in learning can be done by applying the SCL learning method (Student Centered Learning).
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