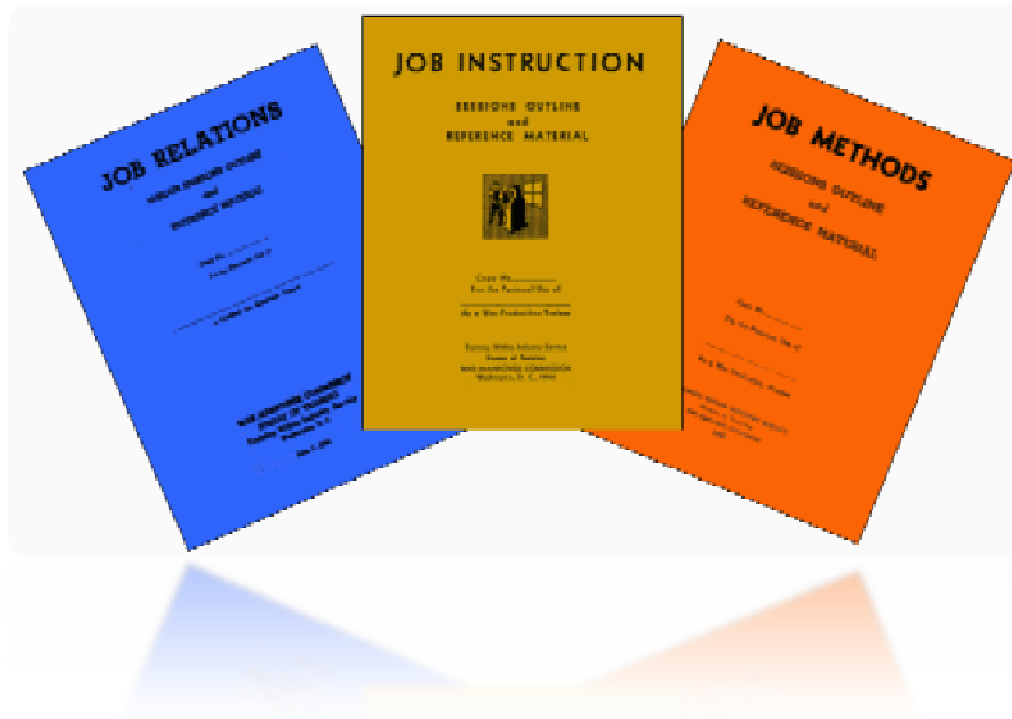

Trening unutar industrije (TWI)



http://chapters.sme.org/204/TWI_Materials/TWIPage.htm

Trening unutar industrije (1)

- Vlada SAD je 22. juna 1940. osnovala agenciju za obuku unutar industrije;
- Bilo je neophodno obezbediti velike količine materijalnih dobara, čak iako Amerika ne bude učestvovala u ratu;
- Kako bi se proizvodnja podigla na ratni nivo, bilo je neophodno obučiti milione neiskusnih radnika, poslovođa i menadžera;
- Jedan od prvih problema koji je TWI trebalo da reši je nedostatak stručnih brusачa sočiva neophodnih za izradu optičkih uređaja neophodnih u ratu.

Trening unutar industrije (2)

- Osnovni princip TWI je stvaranje “multiplikativnog efekta”: razviti standardni model, a zatim obučiti ljude koji će obučiti druge ljude da koriste ovaj model;
- Bilo je neophodno obezbediti visok kvalitet obuke;
- Treneri su imali aktivan status samo ako održali kurs u prethodnih 90 dana;
- “RADI PO OVOM UPUTSTVU, NEMOJ VEROVATI PAMĆENJU”
- Učenje primenom (learning by doing).

Trening unutar industrije (3)

- TWI je obezbeđivao tri standardizovana programa obuke za upravnike i poslovođe:
 - Trening za radnu obuku (Job Instruction Training – JIT) uči upravnike i poslovođe značaju odgovarajuće obuke njihovih radnika i načinu da je postignu;
 - Trening za metode rada (Job Methods Training –JMT) je usmeren na to kako da se stvore i sprovedu ideje za poboljšanje metoda (osnova za kasniji razvoj Kaizena);
 - Trening o radnim odnosima (Job Relations Training – JRT) se bavi odnosima poslovođa i radnika sa rukovodstvom i rešavanjem problema i konflikata.
-

Trening za radnu obuku

HOW TO GET READY TO INSTRUCT

- Have a Time Table—**
how much skill you expect him to have, by what date.
- Break Down the Job—**
list important steps.
pick out the key points. (Safety is always a key point.)
- Have Everything Ready—**
the right equipment, materials, and supplies.
- Have the Workplace Properly Arranged—**
just as the worker will be expected to keep it.

Job Instruction Training

TRAINING WITHIN INDUSTRY
Bureau of Training
War Manpower Commission

KEEP THIS CARD HANDY

GPO 16-35140-1

Front of the Job Instruction Card

HOW TO INSTRUCT

Step 1—Prepare the Worker

- Put him at ease.
State the job and find out what he already knows about it.
Get him interested in learning job.
Place in correct position.

Step 2—Present the Operation

- Tell, show, and illustrate one **IMPORTANT STEP** at a time.
Stress each **KEY POINT**.
Instruct clearly, completely, and patiently, but no more than he can master.

Step 3—Try Out Performance

- Have him do the job—correct errors.
Have him explain each **KEY POINT** to you as he does the job again.
Make sure he understands.
Continue until **YOU** know **HE** knows.

Step 4—Follow Up

- Put him on his own. Designate to whom he goes for help.
Check frequently. Encourage questions.
Taper off extra coaching and close follow-up.

16-35140-1

***If Worker Hasn't Learned,
the Instructor Hasn't Taught***

Back of the Job Instruction Card

Trening za metode rada

3

HOW TO IMPROVE JOB METHODS

A practical plan to help you produce **GREATER QUANTITIES** of **QUALITY PRODUCTS** in **LESS TIME**, by making the **best use** of the **Manpower, Machines and Materials, now available.**

STEP I—BREAK DOWN the job.

1. List **all** details of the job **exactly** as done by the **Present Method.**
2. Be sure details include all:—
 - Material Handling.
 - Machine Work.
 - Hand Work.

STEP II—QUESTION every detail.

1. Use these types of questions:
 - WHY is it necessary?
 - WHAT is its purpose?
 - WHERE should it be done?
 - WHEN should it be done?
 - WHO is best qualified to do it?
 - HOW is the 'best way' to do it?
2. Also question the:
 - Materials, Machines, Equipment,
 - Tools, Product Design, Layout,
 - Work-place, Safety, Housekeeping.

STEP III—DEVELOP the new method.

1. **ELIMINATE unnecessary** details.
2. **COMBINE** details when practical.
3. **REARRANGE** for better sequence.
4. **SIMPLIFY all necessary** details:—
 - Make the work **easier and safer.**
 - **Pre-position** materials, tools and equipment at the best places in the **proper work area.**
 - Use **gravity-feed** hoppers and **drop-delivery** chutes.
 - Let **both hands** do **useful work.**
 - Use **jigs and fixtures** instead of hands, for holding work.
5. **Work out** your idea **with others.**
6. Write up your proposed new method.

STEP IV—APPLY the new method.

1. **Sell** your proposal to the **boss.**
2. **Sell** the new method to the **operators.**
3. Get final approval of all concerned on **Safety, Quality, Quantity, Cost.**
4. Put the new method to work. Use it until a **better way** is developed.
5. Give **credit** where credit is due.

—————

**Job Methods Training Program
TRAINING WITHIN INDUSTRY
War Manpower Commission**

GPO 16-31488-1

16-31488-1

Trening o radnim odnosima

HOW TO HANDLE A PROBLEM

DETERMINE OBJECTIVES

Step 1—Get the Facts

Review the record.
What policies, rules, regulations apply?
Talk with individuals concerned and get opinions and feelings.

Be sure you have the whole story.

Step 2—Weigh and Decide

Fit the facts together and consider their bearing on each other.
What possible actions are there?
Check each action against objectives weighing effect on individual, group, and production.

Select the best actions.

Don't jump to conclusions.

Step 3—Take Action

Should I handle this myself?
Who can help in handling?
Should I refer this to my supervisor?
Consider proper time and place.
Explain and get acceptance.

Don't pass the buck.

Step 4—Check Results

How soon and how often will I check?
Watch for changes in output, attitudes, and relationships.

Did my action help production?

WERE OBJECTIVES ACCOMPLISHED?

A Supervisor Gets Results Through People

FOUNDATIONS FOR GOOD RELATIONS

1. Let Each Employee Know How He Is Getting Along

Figure out and tell him what you expect.

Point out ways to improve.

2. Give Credit When Due

Recognize extra or unusual performance.

Tell him while it's fresh.

3. Tell An Employee in Advance About Changes That Will Affect Him

Tell him WHY if possible.
Get him to accept the change.

4. Make Best Use of Each Person's Ability

Look for ability not now being used.
Never stand in an employee's way.

People Must Be Treated As Individuals

JOB RELATIONS TRAINING

U. S. Civil Service Commission

JR-2
April 1945

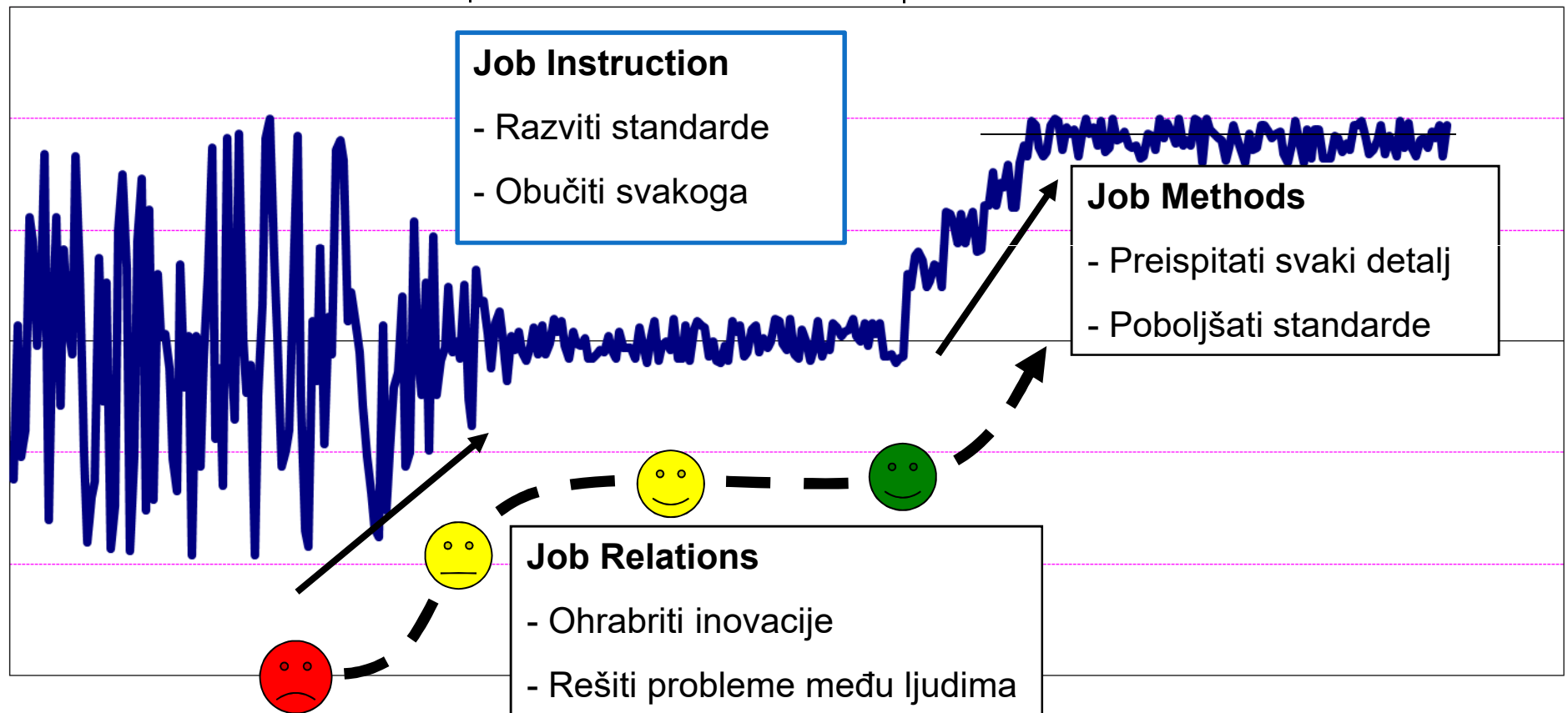
16-44302-1 GPO

Trening unutar industrije (4)

Varijacije uzrokuju nestabilnost procesa

Smanjiti varijacije standardnim radom

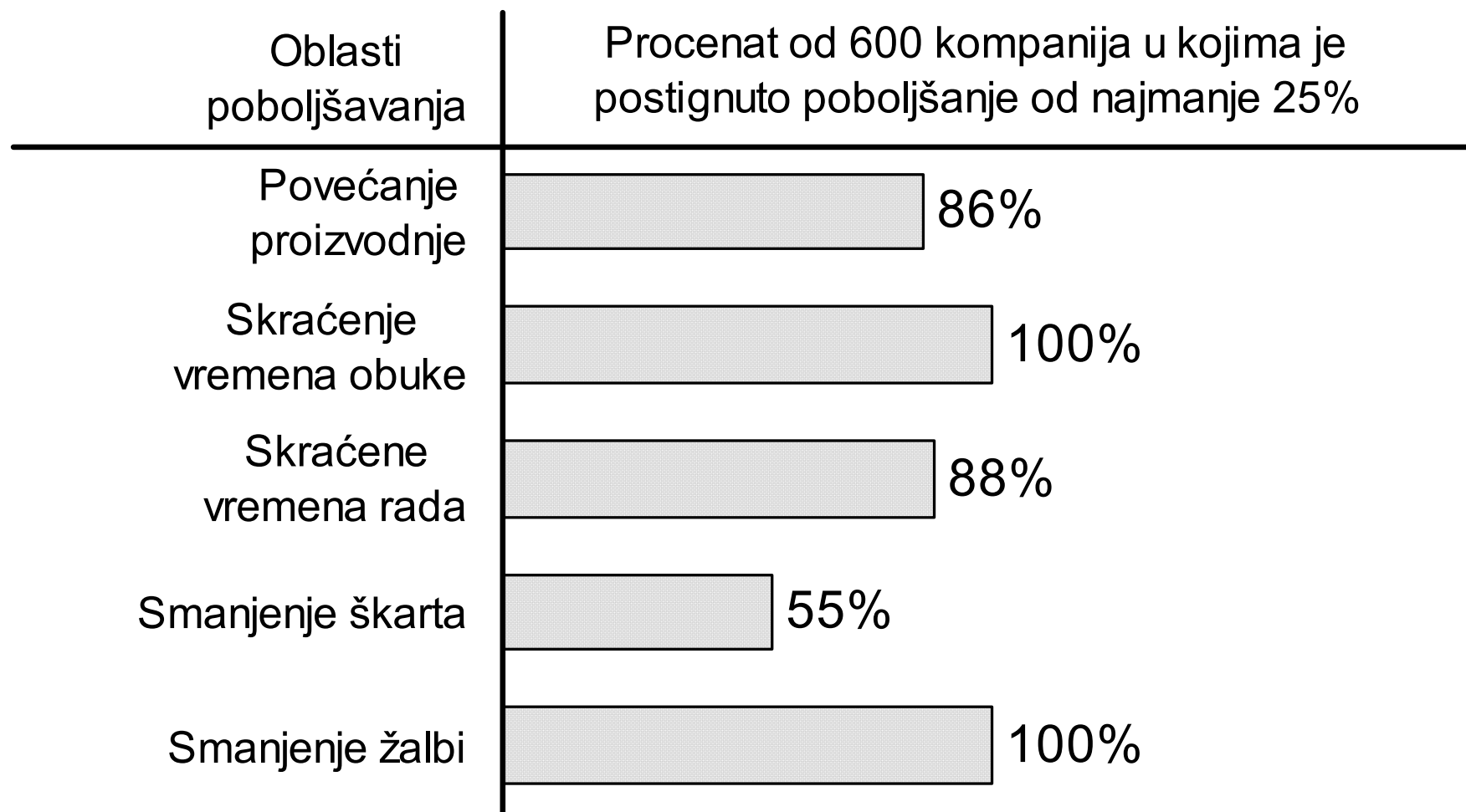
Raditi na unapređenjima iz stabilne osnove



Trening unutar industrije (5)

- Namera je proizvesti veće količine kvalitetnih proizvoda za kraće vreme, koristeći na najbolji način ljude (men), mašine (machines) i materijale (materials) koji su trenutno raspoloživi;
- Cilj je raditi pametnije, a ne napornije (work smarter, not harder);
- Mogu se pojaviti osetljivi problemi: šta uraditi ako neki radnici postanu višak kao posledica unapređenja metoda rada?

Efekti primene TWI programa



Karta podele rada (1)

- Napraviti spisak **važnih koraka** (šta da se radi):
 - Važni koraci koji čine da posao napreduje;
 - Dovoljno mali da mogu da se “progutaju u jednom zalogaju”;
 - Idealno bi bilo da svaki korak sadrži podjednaku količinu posla;
 - Svaki važan korak započeti glagolskim oblikom;
 - Izabrati ključne tačke (kako da se radi):
 - Bezbedonosni faktori;
 - Ključne stvari za uspeh, odnosno neuspeh posla;
 - Stvari koje posao čine lakšim;
 - Ako ima više od 5 ključnih tačaka razmotriti deljenje jednog koraka na više njih;
 - Sumirati razloge za ključne tačke (zašto).
-

Karta podele rada (2)

Job Breakdown Sheet

Description of the task:	How to scoop ice cream	<u>List Common Key Points:</u> Ice cream should be stored at -10F to -20F prior to use in the parlor. Parlor freezer should always be set to 8°F.
Parts (UPN, describe the parts)	Ice cream stored at 8°F in parlor cooler	
Tools & supplies required:	Dipper (ice cream scoop) staged in pan of water	
Safety equipment required:	Coffee, to offset ice cream headache	


Important Steps		Key Points		Reasons		Training Aid: (put hand sketches, diagrams, parts, or layouts here. Insert a digital picture if available.)
WHAT?	A Logical segment of the operation that advances the work.	HOW?	Things in important steps that will: 1. make or break the job 2. injure the worker 3. make the work easier	WHY?	List the reasons for the key points	
1	Scoop ice cream	1) Tap dipper lightly to remove water 2) Start on outside wall 3) Roll, don't dig	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	1) Nobody wants water in there ice cream. 2) If start on inside, you dig and can't get nice round scoops. 3) Rolling makes the dipperfuls round.		
2	Put dipperful in the cone	n/a				
3	Scoop again (if desired) OR Put lid back on tub.	1) Dip scoop in water 2) Tap off excess lightly 3) Start next scoop where last one left off	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	1) Light coating of water helps the ice cream roll in the scoop, prevents sticking to the scoop. 2) Nobody wants water in there ice cream. 3) Promotes good rolling technique, discourages digging from the middle.		

Key Point reminders: <input type="checkbox"/> Critical check or inspection <input type="checkbox"/> Quantity Check <input type="checkbox"/> Could injure the person <input checked="" type="checkbox"/> Makes the job easier	Owner of this document: Chief Soda Jerk	Page: 1 of 1	Rev: Date: 5/15/07
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“If the person hasn't learned, the instructor hasn't taught.”

Karta podele rada (3)

Job Breakdown Sheet

Description of the task:		How to bump a volleyball.				<u>List Common Key Points:</u>			
Parts (UPN, describe the parts)		One volleyball				Body position is the most important key.			
Tools & supplies required:		None							
Safety equipment required:		None							
Important Steps		Key Points		Reasons		Training Aid: (put hand sketches, diagrams, parts, or layouts here. Insert a digital picture if available.)			
WHAT?	A Logical segment of the operation that advances the work.	HOW?	Things in Important steps that will: 1. make or break the job 2. injure the worker 3. make the work easier	WHY?	List the reasons for the key points				
1	Hand position	1. Both hands palm up 2. Place one hand in top of the other 3. Curve hands and put thumbs together	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	1. Hit ball on top of arms 2. Locks the hands together so they don't spread apart					
2	Arm position	1. Arms straight and lock elbows 2. Hands lined up with bellybutton 3. Hand out from bellybutton about 1 foot 4. Tap off excess lightly Start next scoop where last one left off	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	1. Makes a flat surface on arm for better control 2. Easy to pass ball forward 3. Keep you body bent forward and arms out front.					
3	Leg position	1. Stand feet apart shoulder-width 2. Squat to bend knees	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	1. Stronger body position and balanced 2. Move quick and balanced					
4	Bump (pass) the volleyball	1. Watch the ball 2. Move body and arms to line up with ball 3. Move arms out 4-5 inches from body 4. Bump or make contact with ball on both lower arm	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	1. See where the ball is going 2. Hit the ball ion the right place on the arms 3. Make ball bump in right direction 4. Even surface for ball to bump off					
Key Point reminders: <input type="checkbox"/> Critical check or inspection <input type="checkbox"/> Quantity Check <input type="checkbox"/> Could injure the person <input checked="" type="checkbox"/> Makes the job easier						Owner of this document: Alisha Odle		Page: 1 of 1	Rev: Date: 5/18/09

"If the person hasn't learned, the instructor hasn't taught."

Karta podele rada – izrada aviona (1) ^{14 / 17}

Ključne oblasti:

- Podela rada, standardizacija posla, TWI,

Proizvodnja ili usluge?

- Sve proizvodne operacije; mnoge uslužne operacije;

Kratak opis

- Zadatak učesnika u igri je da, na osnovu modela papirnog aviona, kao i ličnog poznavanja izrade papirnih aviona, konstruišu kartu podele rada;

Karta podele rada – izrada aviona (2) ^{15 / 17}

Čemu nas igra uči?

- Izrada karte podele rada;
- Razumevanje važnih koraka, ključnih smernica, kao i razloga za ključne smernice.

Broj igrača:

- Bilo koji broj, najbolje do 15 igrača;

Trajanje igre:

- Oko 30 minuta

Opis:

- Jedna grupa igrača analizira model papirnog aviona, a zatim sami izrađuju papirni avion. Nakon toga konstruišu kartu podele rada, i spremaju obuku druge grupe igrača koja nije izrađivala papirne avione. Nakon obuke, druga grupa igrača izrađuje avion, prema uputstvu koje su sastavili članovi prve grupe.
-

Karta podele rada – izrada aviona (3) ^{16 / 17}

Potrebno je:

- Identifikovati važne korake izrade aviona od papira, koji čine da posao napreduje. To su glavni logički koraci izrade. Nije neophodno dokumentovati svaki korak. Na primer, ne treba dokumentovati korak “uzeti papir” obzirom da je to očigledno, i da način izvršenja tog koraka nije bitan za kvalitet posla;
- Identifikovati ključne smernice. To su stvari u važnim koracima koje mogu učiniti da posao uspe ili ne, povrediti radnika, ili učiniti posao lakšim. Kako osigurati kvalitet izrade?
- Popuniti razloge za ključne smernice.

Karta podele rada – izrada aviona (4) ^{17 / 17}

Obuka radnika:

- Pripremiti radnika – objasniti važnost posla, saznati šta radnik već zna o poslu, opustiti radnika, postaviti ga u pravilan položaj za rad. Uvek ohrabrivati postavljanje pitanja!!!
- Objasniti operaciju – verbalno objasniti, prikazati i ilustrovati sve važne korake, jedan po jedan. Naglasiti ključne smernice za svaki korak. Instrukciju vršiti jasno, srpljivo i u potpunosti;
- Omogućiti probno izvođenje operacije – pustiti radnika da samostalno izvede operaciju. Ukazati na eventualne greške. Neka radnik ponavlja ključne smernice dok izvodi posao. Uveriti se da je radniku jasno šta treba da radi i na koji način. Ponavljati dok instruktor ne postane siguran da radnik ZNA da izvede operaciju;
- Pustiti radnika da samo stalno radi posao – odrediti osobu od koje radnik može da traži pomoć. Često nadgledati izvođenje operacije. Obezbediti dodatnu obuku. Ohrabrivati postavljanje pitanja!!!

Reference

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